VOLUME XL NUMBER FOUR

THE NATIONAL GEOGRAPHIC MAGAZINE

OCTOBER, 1921

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TO CARRY out the purposes for which it was founded thirty-three years ago, the National Geographic Society publishes this Magazine. All receipts are invested in the Magazine itself or expended directly to promote geographic knowledge.

ARTICLES and photographs are desired. For material which the Magazine can use, generous remuneration is made. Contributions should be accompanied by an addressed return envelope and postage.

IMMEDIATELY after the terrific eruption of the world's largest crater, Mt. Katmai, in Alaska, a National Geographic Society expedition was sent to make observations of this remarkable phenomenon. Four expeditions have followed and the extraordinary scientific data resultant given to the world. In this vicinity an eighth wonder of the world was discovered and explored—"The Valley of Ten Thousand Smokes," a vast area of steaming, spouting fissures. This area has been created a National Monument by proclamation of the President of the United States.

THE Society organized and supported a party, which made a three-year study of Alaskan glaciers.

GEOLOGISTS were sent to study the Mt. Pelée, La Soufriere, and Messina disasters.

AT AN expense of over $50,000 The Society sent a notable series of expeditions into Peru to investigate the traces of the Inca race. Their discoveries form a large share of our knowledge of a civilization which was waning when Pizarro first set foot in Peru.

THE Society also had the honor of subscribing a substantial sum to the historic expedition of Admiral Peary, who discovered the North Pole.

NOT long ago The Society granted $25,000, and in addition $75,000 was given by individual members through The Society to the Federal Government when the congressional appropriation for the purchase was insufficient, and the finest of the giant sequoia trees of California were thereby saved for the American people and incorporated into a National Park.

THE Society is conducting extensive explorations and excavations in Northwestern New Mexico, which was one of the most densely populated areas in North America before Columbus came, a region where prehistoric peoples lived in vast communal dwellings whose ruins are ranked second to none of ancient times in point of architecture, and whose customs, ceremonies, and name have been engulfed in an oblivion more complete than any other people who left traces comparable to theirs.

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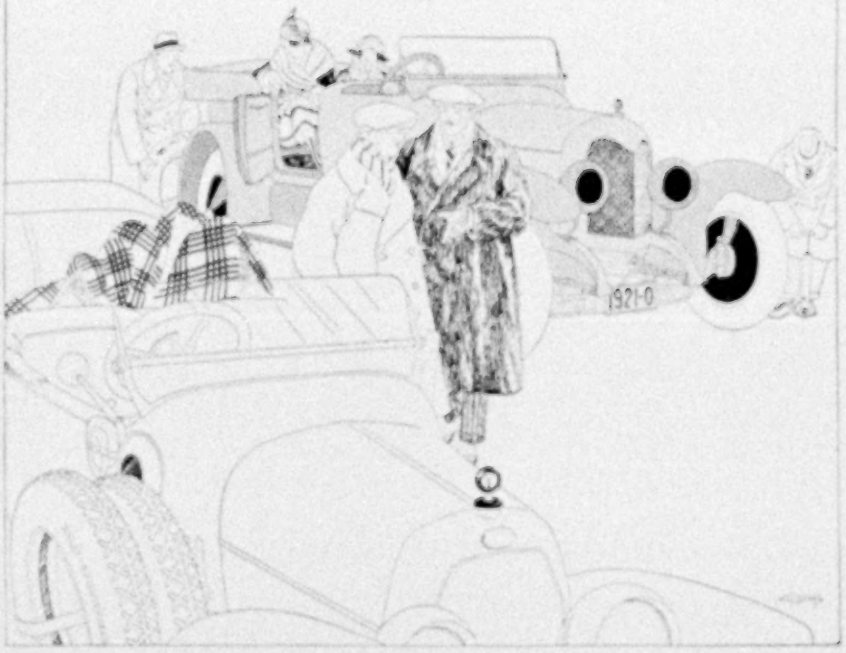
Prize Contest Announcement

AFTER weeks of consideration of the conversation submitted by the 120,000 or more persons who sent in entries to the Kelly-Springfield Prize Contest advertised in the April issue of this magazine, the judges rendered a decision in favor of the dialogue sent in by Miss Claire Newman of 703 Mt. Prospect Ave., Newark, N. J.



"It's great to have friends for an emergency like this."

"It's better to have Kelly-Springfields—then you never have the emergency."

Submitted by Miss Claire Newman

THE judges had a difficult task. There were a large number of exceedingly clever entries, but many of them had to be discarded either because they did not fit the picture or because they were so similar to captions suggested by two or three hundred other contestants that it was impossible to decide which had phrased the idea best.

Every letter submitted was read as it came in and was immediately either laid aside for further consideration or eliminated for one reason or another. When the closing date came the judges had over a thousand entries for final consideration. This number was gradually sifted down to fifteen. Each of the three judges then wrote down his first, second, and third choice of the fifteen. When the lists were compared, it was found that Miss Newman's contribution was the only one which had been chosen by all three judges, and a check for $250.00 was therefore mailed to her.

A contribution from far-off Peru got two votes and so did one from a Pennsylvania farm, but the winning caption was the only one that got all three votes.

The entries came in from all over the world—from Canada, Mexico, Cuba, South America, Hawaii, the Philippines, Japan, China, France, England, Alaska, and every State in the Union.

Only four contestants failed to recognize the picture as a Kelly-Springfield advertisement.

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Do you know the correct way to introduce people?

Do you know how to word announcements and invitations?

Do you know how to create conversation when left alone with a noted person?

WE have all had our embarrassing moments. We all suffered moments of keen humiliation, when we wished that we had not done or said a certain thing. We have all longed, at some time or other, to know just what the right thing was to do, or say, or write.

Every day, in our business and social life, puzzling little questions of good conduct arise. We know that people judge us by our actions, and we want to do and say only what is absolutely in good form. But, oh, the embarrassing blunders that are made every day by people who *do not know!*

The Only Way

There is only one *sure* way to be calm and well-poised at all times—to be respected, honored and admired wherever you happen to be. And that is by knowing definitely, positively, the correct thing to do on all occasions. Whether you are dining in the most exclusive restaurant or at the most humble home, whether you are at the most elaborate ball or the most simple barn-dance, whether you are in the company of brilliant celebrities or ordinary people, you will be immune to all embarrassment, you will be safe from all blundering mistakes—if you know the simple rules of etiquette.

What Is Etiquette?

Etiquette is not a fad. It is not a principle or theory or belief. It is meant not merely for the very wealthy or for the extremely well-educated. It is meant for all people, who, in the course of their everyday life, find it necessary to keep themselves well in hand; to impress by their culture, their dignity; to know how to be trusted and respected in business, and admired in the social world; and for women who wish to be considered at all times cultured and charming.

It is embarrassing to overturn a cup of coffee and not know just what to say to the hostess. It is embarrassing to arrive late to an entertainment, and not know the correct way to excuse yourself. It is embarrassing to be introduced to some brilliant celebrity, and not know how to acknowledge the introduction and lead subtly to channels of interesting conversation.

The man who is polished, impressive, and the woman who is cultured, will find the doors of the most exclusive society

What Would YOU Do—

—**if** several plates and chafing-dish were set before you in a restaurant and you did not know how to use them?

—**if** you arrived late at an entertainment?

—**if** you overturned a cup of coffee on your hostess' table-linen?

—**if** you were introduced to a noted celebrity and were left with him, or her, alone?

—**if** you were not asked to dance at a ball?

—**if** you made an embarrassing blunder at a formal affair?

These are only a few of the hundreds of situations in which you should know exactly the correct thing to do or say.

opened to admit them. But the world is a harsh judge—and he who does not know what to do and say and wear on all occasions will find himself barred, ignored.

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You have often wondered how to word invitations, how to acknowledge introductions, how to ask a lady to dance, how to act at the wedding, the funeral, the theater, the opera. Here is your opportunity to find out the absolutely correct thing to do, say, write, and wear on all occasions.

The Book of Etiquette, in two large volumes, covers every detail of everyday etiquette. It tells you how to act at the dinner table, how to excuse yourself if you drop a fork, how to accept and refuse a dance, how to write and answer invitations, how to make and acknowledge introductions. It tells you what to wear to the dinner, the dance, the party, what to take on week-end trips and on extended Summer trips.

You cannot do without the Book of Etiquette. You need it to refer to whenever some important event is pending. You need it to refer to whenever you are in doubt, whenever you are puzzled, anxious. It corrects the blunders you have perhaps unknowingly been making; helps you to avoid all embarrassment; shows you the way to be always, at all times, cultured, impressive and charming.

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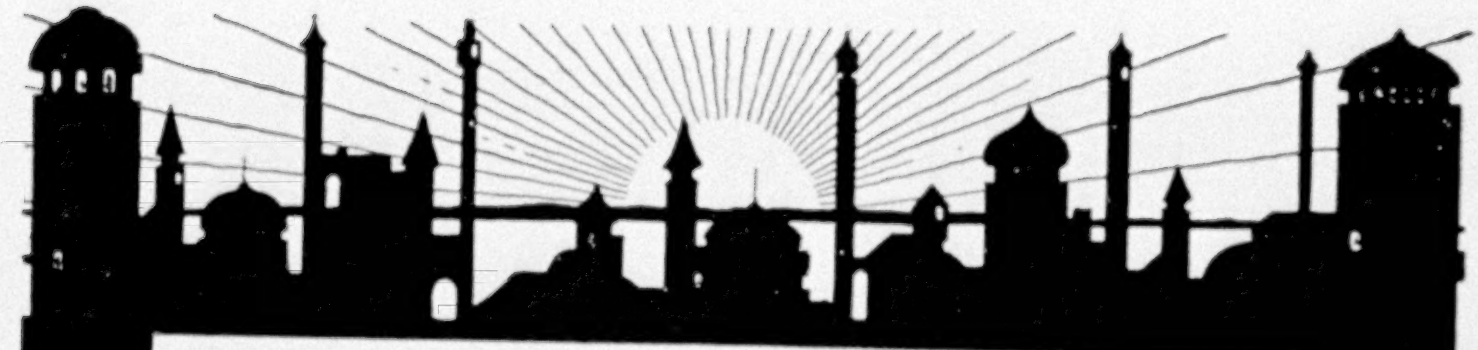

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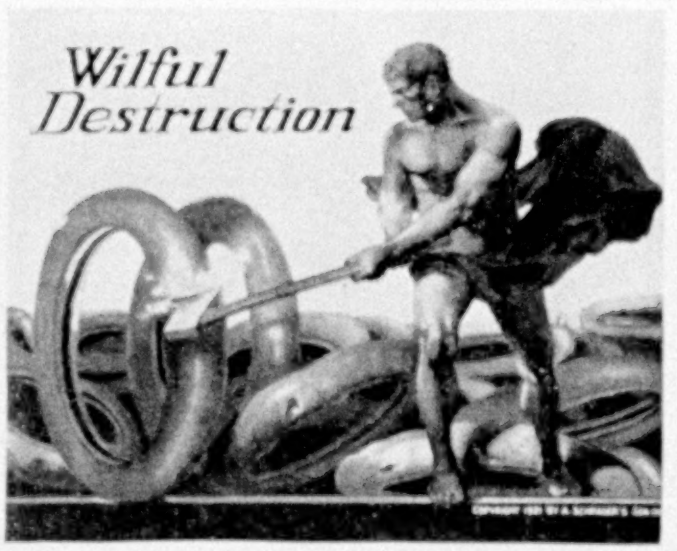

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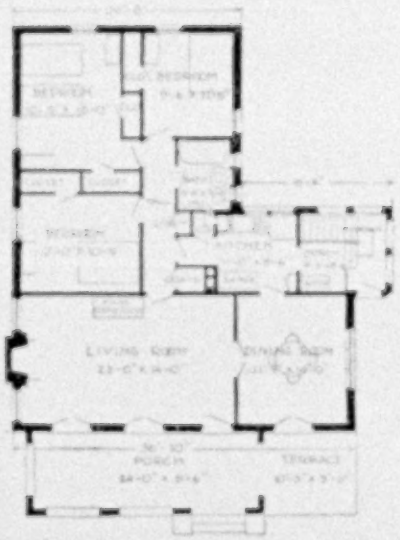

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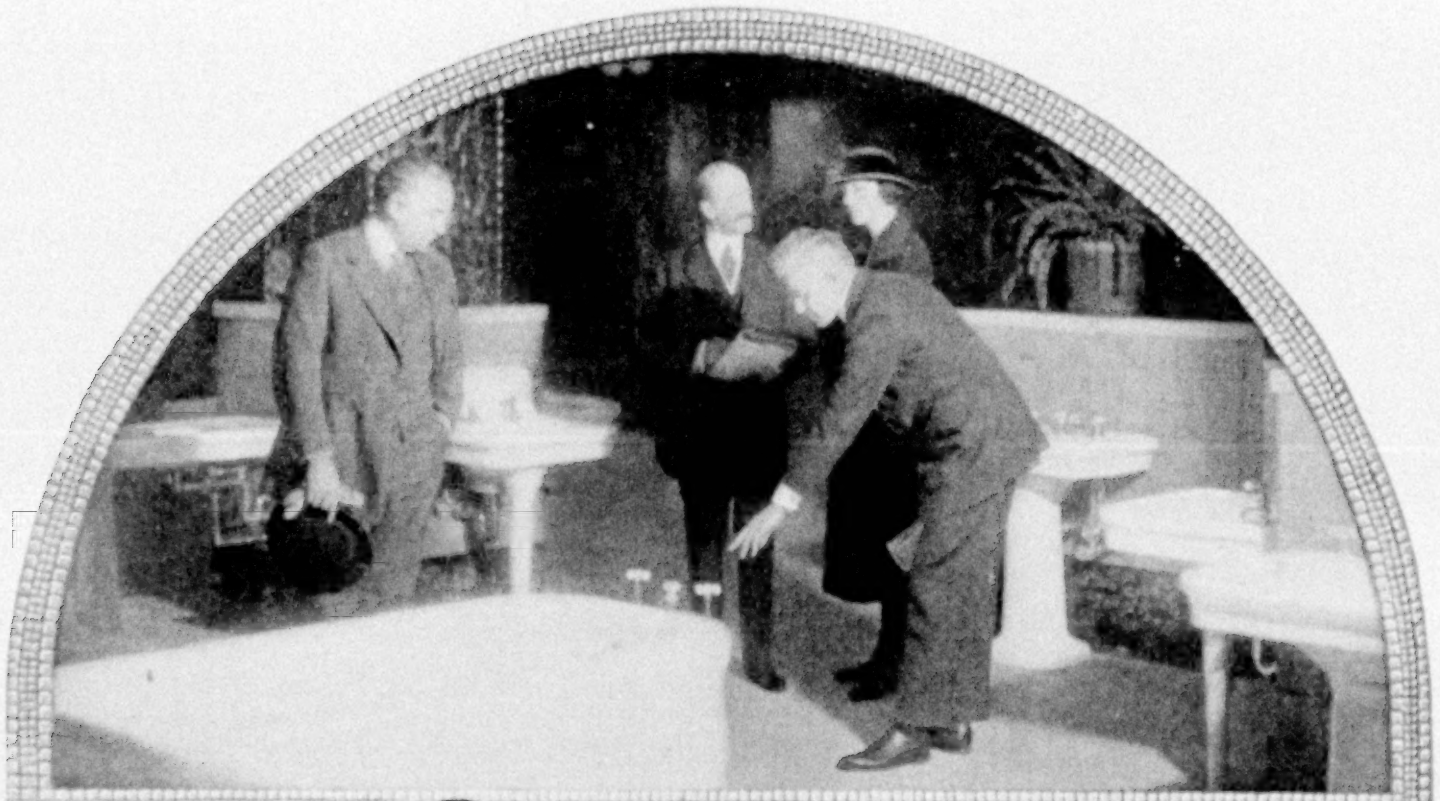

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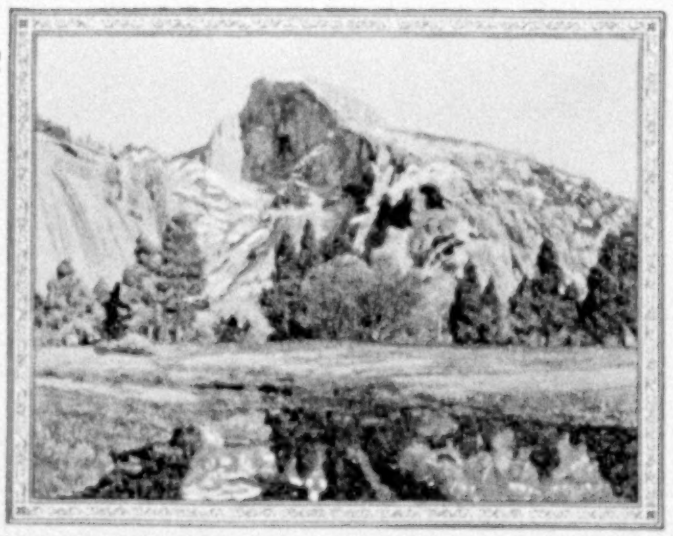

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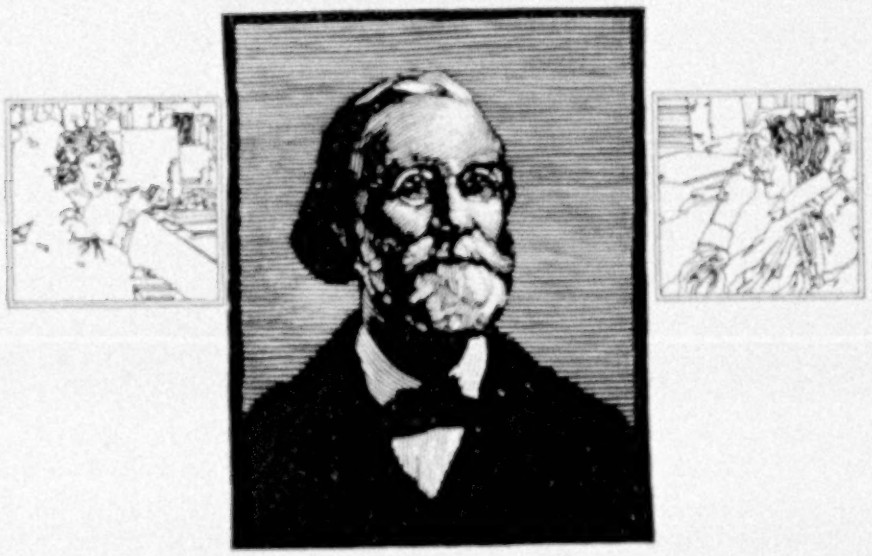

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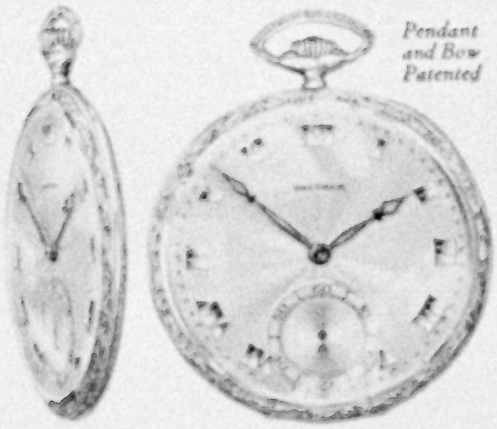

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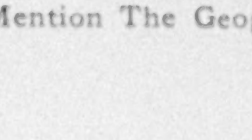

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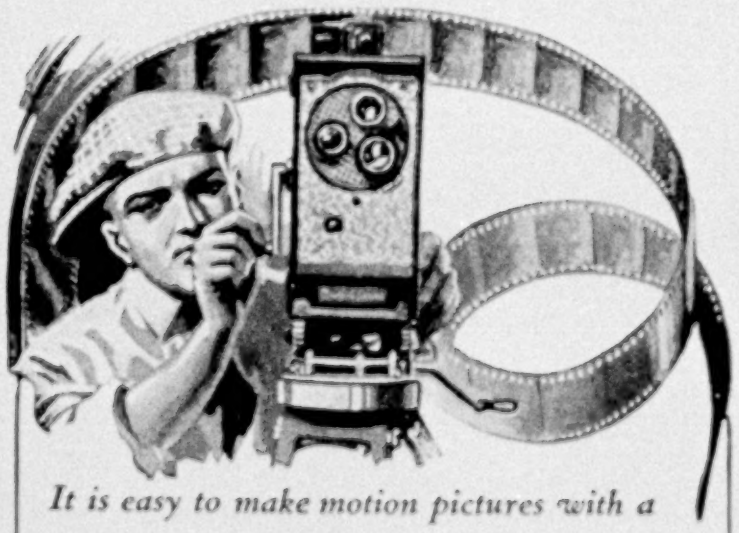

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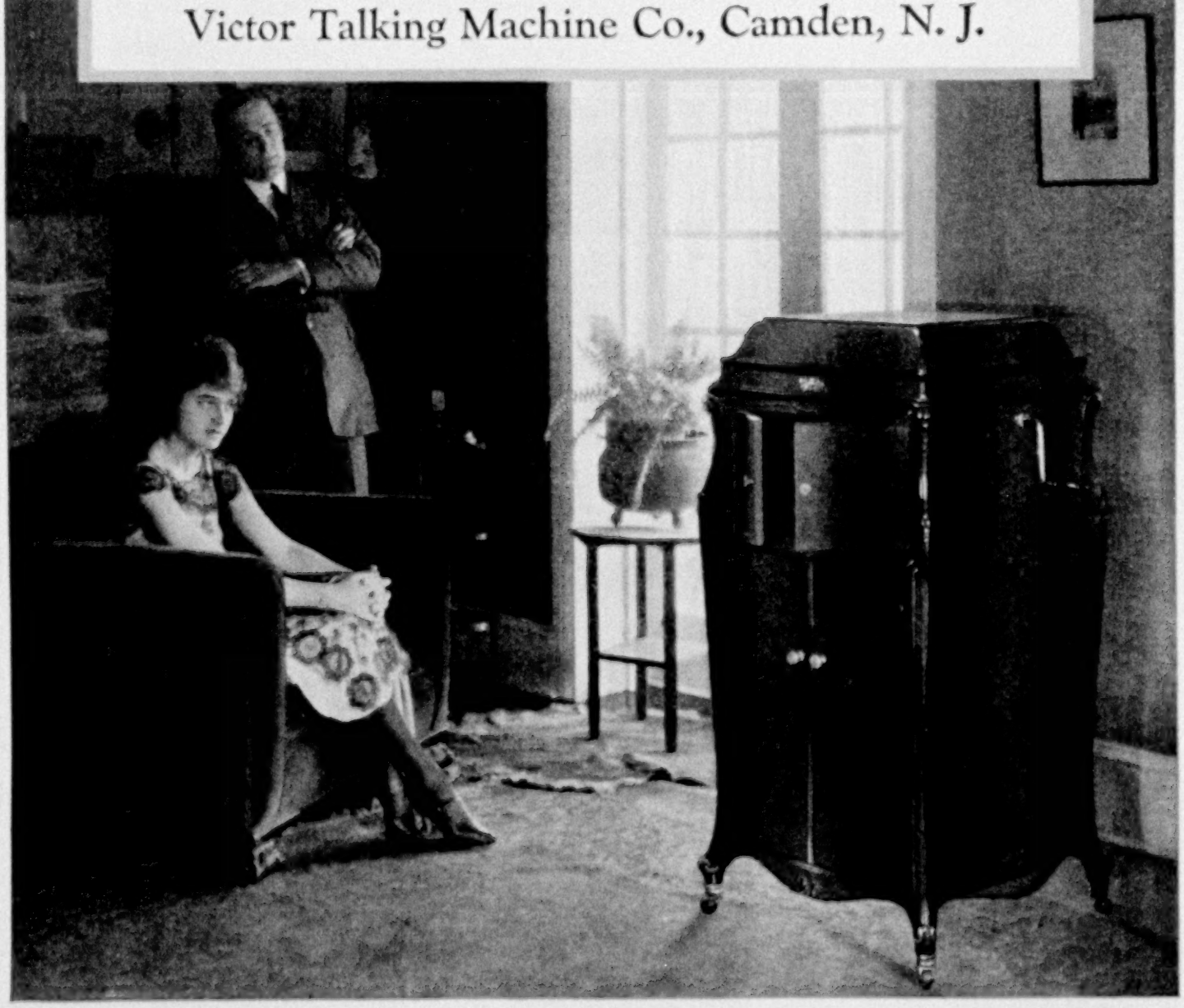

XUM

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OVER TRAIL AND THROUGH JUNGLE IN ECUADOR

Indian Head-Hunters of the Interior an Interesting Study in the South American Republic

BY H. E. ANTHONY*

With Illustrations from Photographs by the Author

ECUADOR is a land of great interest to the northerner, whether he be scientist or layman; or whether his inclinations lead him to a study of peoples, their customs and traditions, or to the enjoyment of the natural features of the country—the birds, the mammals, the magnificent forests and lofty mountains.

This republic occupies a unique geographical position, astride the Equator, where it extends approximately from one degree thirty minutes north latitude to almost five degrees south latitude. Within this comparatively short distance are included some of the grandest of the Andean peaks and a multitude of mighty ranges and deep cañons.

On the west coast, Ecuador holds a strategic position in regard to the Humboldt Current, that chill invader from southern seas, for it is at this point that the current sheers off to the westward and its influence upon the winds and the climatic conditions of South America is weakened.

The eastern boundaries of the republic lie across Amazonian drainage, and cut the Napo, the Pastaza, and the Paute, all affluents of the world's largest river.

The topography is extremely mountainous. Although there are restricted plains in western Ecuador, the greater part of the republic lies along the Andes and their foothills, so that level areas of any great extent are seldom encountered.

The drainage of the country includes a number of large rivers flowing to the eastward, as well as several important western-flowing streams.

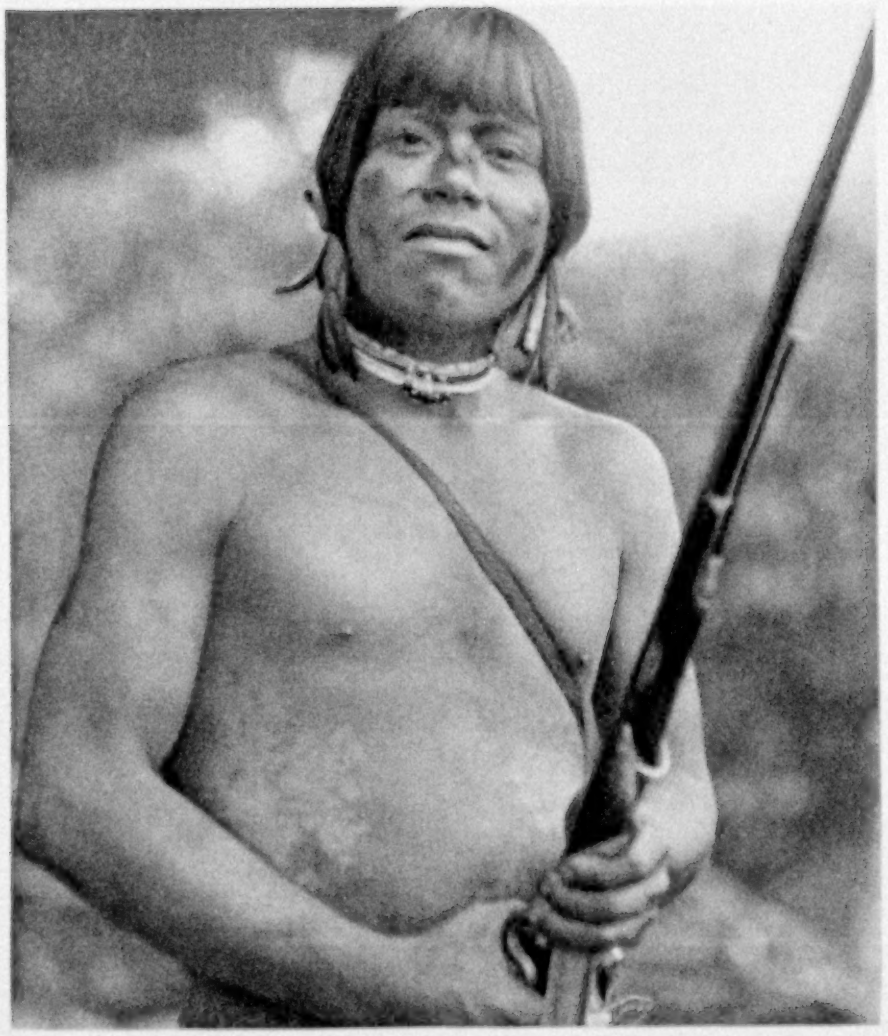
Except for a narrow coastal strip, Ecuador receives abundant rainfall. The year is divided into two seasons—the dry season and the wet, or so-called rainy, season. The rains generally begin in December or January and last until May or June, the balance of the year having only a scanty rainfall.

In some localities there is a deviation from this order, and on the eastern slopes of the Andes there are heavy rains in every month of the year. The annual rainfall in some parts of the *Oriente* may reach as high as 150 to 200 inches.

ECUADOR'S JIVAROS ARE HEAD-HUNTING INDIANS

The population of Ecuador is made up of three distinct elements. Most of the educated, upper class are of Spanish descent and all of the political offices are

*The author, accompanied by Mr. George K. Cherrie, was the leader of an expedition sent to Ecuador, June, 1920, to March, 1921, by the American Museum of Natural History, of which he is the Associate Curator of Mammals of the Western Hemisphere.



HE MAY HAVE PAID A HUMAN HEAD FOR HIS WEAPON
(SEE PAGE 331)

A few of the Jivaros have been able to procure muskets from traders. This burly Indian carried a muzzle-loading gun of cheap origin, the discharge of which must have been almost as much of a threat to the shooter as to the man at the muzzle end. The Jivaros were never weary of handling and admiring the author's guns, which represented to them the highest forms of wealth.

filled by men of this type. The great bulk of the population, however, is Indian, the Quichuas, who are themselves the descendants of the Incas.

The third element of the Ecuadorean population comprises the wild and savage Indian tribes of the *Oriente*, typified by the Jivaros or head-hunters. These latter Indians, while nominally under the government of Quito, are so far removed by the inaccessibility of their home territory that Ecuadorean laws rest lightly upon them, and they are in many respects as primitive today as when America was discovered.

It is to the purely American elements of the population that one looks for strange customs of interest to the northern visitor, and the Indians do not prove disappointing in this respect.

The Indians of the *Oriente* are much more savage and uncivilized than their brethren of the western Andes, the Quichuas. The Jivaros come into contact with the whites only occasionally, since the country they inhabit is very inhospitable in its climate, its dense, trackless jungles and, to a certain extent in its human population as well. They live in scattered communities, along the tributaries of the Rio Napo and the Rio Paute, seldom venturing very far up on the slopes of the eastern Andes, but remaining below an elevation of 3,500 feet.

WARRIORS ACQUIRE THEIR WIVES AS SPOILS OF WAR

The Jivaros wage a constant warfare among themselves, for which polygamy is the direct cause. We were told that when a girl arrives at the marriageable age, about twelve to fourteen years, she is given in marriage by her father to some friend, but most of the wives are gained by the killing of an enemy and the confiscation of the women as the spoils of war. A man may have from five to eight wives.

The warfare may be against a member of a neighboring tribe or against a fellow-Jivaro living at some distance. The women and children of the slain man are adopted into the household of the victor, where they become members of the family and are treated in the same manner as the immediate family, not as slaves.

These Indians have a pseudo-religion which is based on a belief in a being called by the Spaniards *el diablo*, the devil. He has the attributes of a super-Jivaro, is all powerful in everything he under-

takes, but is not particularly addicted to evil for its own sake.

No important project is undertaken without first consulting *el diablo* and getting his views. The Jivaros do not appear to have a highly developed priestly class and any man may enter into consultation with him. To do this, it is necessary to retire to the seclusion of some spot remote from the rest of the Jivaros, and here the would-be communicant prepares himself for the ordeal by drinking a quantity of a certain extract made from a particular variety of bark. This fluid is dark, about the color of coffee, and contains some very powerful narcotic principle, for it produces a stupor and hallucinations, of a different type but in a way comparable to the result produced by the use of opium or hemp.

While under the influence of this drink, which may be for four or five hours, the Jivaro imagines that the devil comes to him and discusses whatever matter is afoot. Inasmuch as the mind of the man is filled with his plans when he takes the narcotic, it is but natural that his disordered reason concocts a fanciful dialogue and arrives at a confirmation of what he really believed when he first came.

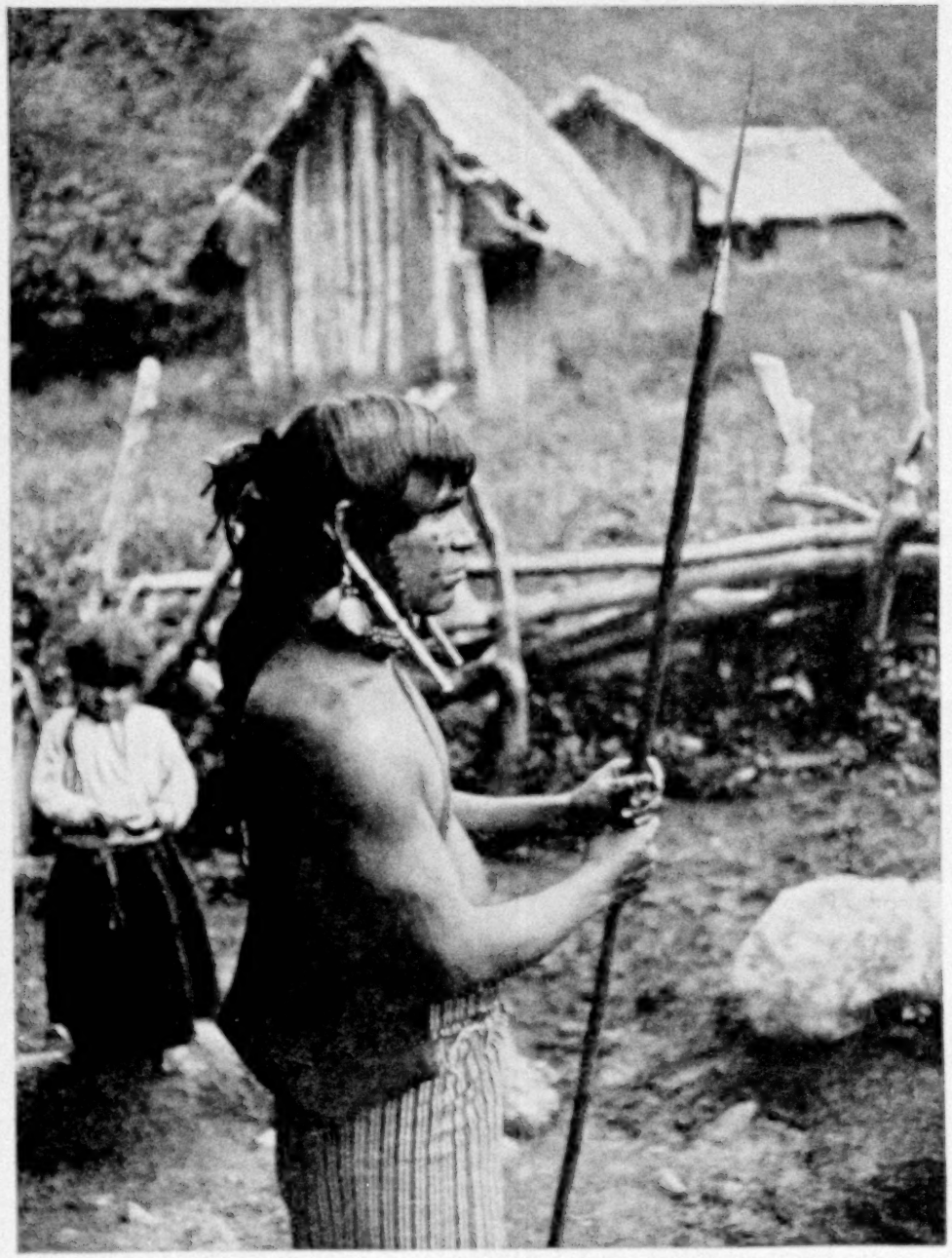
If the devil has properly coached his client and the raid is eminently successful, the hut of the victim is surrounded, and when the latter steps out of the door he receives at close range the contents of all the guns in the party. The women and children are hastily captured and the raiders seek the safety of their own neighborhood, with the reasonable assurance that sooner or later they will be raided in a like manner by relatives of the slain man.

"T'SERIE" DOES NOT LOOK THE PART OF A HEAD-HUNTING SAVAGE

But this is a case where appearances are deceptive. He wore a perpetual smile while visiting the author and his party and seemed the soul of good nature. His necklace is made of white buttons and his hair shows that he gave it all the attention deserved for such a momentous occasion, his debut before the "Gringos." "T'serie" is also the name the Jivaros use for the small marmoset monkey.

PREPARING A VICTIM'S HEAD AS A LASTING TROPHY

The head of the victim is cut off, and later, in the seclusion of his hut, the victor prepares it into a lasting war trophy, attaching to it the significance which the North American Indian attached to



ONE OF THE MOST PICTURESQUE OF THE JIVAROS

His face is spotted with paint; bright red, orange, and yellow toucan feathers are tied in his hair; his necklace is an intricate work of art, while his splendid physique would of itself attract attention. Note the base of the lance is grasped by the great toe.

The lance is used by the Ecuadorean Indians in hunting such animals as the spectacle bear, the peccary, and the tapir, which may be encountered in the jungle trails. It has an iron spearhead and is a formidable weapon.

scalps. The skin is opened up from the base of the neck to the crown, and the skull is removed entire, leaving only the soft, pliant skin.

The skin is now dipped into a vegetable extract which dyes it a blue-black and probably has some action as a preservative, and then the cut skin is sewed up along the neck to restore the head to its original form.

The cavity is filled with hot sand or pebbles, after which the head is constantly turned and moved, so that the drying goes on uniformly. When the sand has cooled, hot sand takes its place, and this process may last for several days before the head is completely cured.

Shrinking to an unbelievable degree takes place, but it is so regulated that the features retain their individuality to a great extent, and the finished head is about the size of a man's fist.

The lips have been sewed shut with a series of long cotton cords, the exact pattern of this stitching varying with the locality and seeming to have some significance.

Within a short time after the preparation of a head, generally within a month, the victor celebrates the event by a ceremonial dance at which there is an orgy of wild drinking. After this dance it may be possible to buy the head from the Jivaro, if his interest can be aroused in an object whose value he understands and appreciates, such as a musket.

SOUVENIR CRAZE STIMULATED HEAD-HUNTING

Because of the interest aroused in the outside world by tales concerning these head-hunters, there has been in the past a lively trade in human heads. The Jivaros, learning that there was this demand which could be capitalized into muskets, quickly gave a ready response; so that it became necessary for the Ecuadorean Government strictly to forbid the traffic in these objects.

Tales are told of the results of this practice which are not without a certain grim irony. There is a story, for example, of a red-headed white man who went into the interior on a trip of exploration charged with the commission of bringing out a dried and shrunken head. It was months after he had departed that a shrunken head came out, by devious channels, from the *Oriente*, but the head had red hair. Perhaps a red-haired head brought the price of two muskets; who can tell?

Contrary to our expectations, after hearing stories of the Jivaros (and to the average Ecuadorean the word Jivaro is synonymous with violent death and all manner of disagreeable things), we found them a good-natured people and very friendly to us.

Like the Quichuas, they are below medium height, but with a splendid chest development and with a rather pleasing cast of countenance. The men wear their hair long, but often cut it away to form bangs in front, and it is ornamented with tufts of bright red and yellow toucan feathers on the crown and at the base of the neck.

The men wear slender tubes of bamboo thrust through the lobes of the ears and the women often have a short piece of cane projecting straight out from the lower lip.

FAITHLESS WIVES RECEIVE DIRE PUNISHMENT

On their own trails, the Jivaro costume could scarcely be considered a burden to the wearer, but when these Indians visit the border settlements they wear a one-piece garment consisting of a cotton cloth, which they weave themselves, caught up around the waist.

The men we saw appeared to treat their women kindly and showed a consideration for their wishes in minor matters. If the wife is detected in any breach of infidelity, however, she is subjected to a terrific course of discipline.

For the first offense the punishment consists of throwing the erring woman to the ground, holding her there, and cutting down on to the crown of her head with a large machete, or brush knife. The man makes a great many cuts, which are at an angle to one another, so that the scalp is literally hacked into small pieces and all the hair is lost.

Should this not prove sufficient to inculcate fidelity, the second offense results in the woman's being pinned to the earth by a long, iron-pointed lance, which is thrust deep into the ground through the fleshy parts of both legs. Given food,

Photograph courtesy American Museum of Natural History

TROPHIES OF A MAN-HUNT IN INTERIOR ECUADOR

These are dyed and shrunken human heads, prepared after the Jivaro recipe, which might be compared to those that one sees in the old English cook books, the ones that begin, "First you catch your hare." The heads shrink to the size of a man's fist and are dyed a blue black. The hair is natural, for the Jivaro warrior wears his locks long (see text, page 331).

water, and sufficient care to prevent death, the offender is left in this position for days, even for a period as long as three weeks.

For the third offense the punishment is death outright.

BLOW-GUNS AND POISONED ARROWS ARE THE NATIVE WEAPONS

As hunters and woodsmen the Jivaros are unsurpassed. Observers of the keenest sort, endowed with that natural instinct of the savage for knowing direction, they hunt and roam over the vast unbroken stretches of jungle, following the paths made by wild animals or slipping through the more open regions regardless of trails, calling the monkeys down the green hillsides by wonderful imitations of their calls, and sleeping at night, like the beasts themselves, where darkness overtakes them.

They hunt largely with the blow-gun, in the use of which they are peculiarly adept. The missiles for these weapons, which are sometimes twelve feet or more in length, are sun-baked balls of clay for the smaller game and poisoned arrows of cane for larger animals.

The poison is apparently a form of curare and is obtained from traders farther down on Amazonian waters. It is very potent, death resulting in a few minutes after an animal has been struck; but the use of it does not spoil the game for consumption.

Salt is said to be an antidote, if placed in the mouth of the stricken animal, and monkeys are sometimes taken alive in this manner, the Jivaro hurrying up to administer the panacea when the quarry falls from the limb in a stupor.

"BARBASCO" USED AS POISON FOR FISH

Another poison which is extensively employed by the Jivaros is *barbasco,* a jungle vine or creeper, which is put into the rivers to secure fish. A great pile of the plant is beaten up on the rocks until it is a pulp, and after the Indians have stationed themselves down-stream some of their number throw two to three hundred pounds of the mash into the river and the fishing begins. The fish are killed and float down, belly up, to be gathered in by the Jivaros, who see them as they pass.

So potent is this juice that large streams may be poisoned by this relatively small amount of *barbasco,* and under favorable circumstances fish are stricken for a distance of three miles down-stream.

Needless to say, the Jivaros speak a language of their own, very distinct from the Quichua tongue, and only a few individuals speak Spanish.

The principal cities of Ecuador are the capital, Quito, and the seaport, Guayaquil. The latter is the first port of call for many ships sailing south of Panama, and to reach it the vessel must enter the Gulf of Guayas, and then steam up the wide tidal river of the Guayas.

Guayaquil is a large city, of about 90,000 population, and for many years had the unsavory reputation of being the worst pesthole on the Pacific coast. This was due to the virulent yellow fever which was prevalent there and to the sporadic outbursts of the bubonic plague, which kept the city under a perpetual quarantine; and travelers shunned it whenever possible.

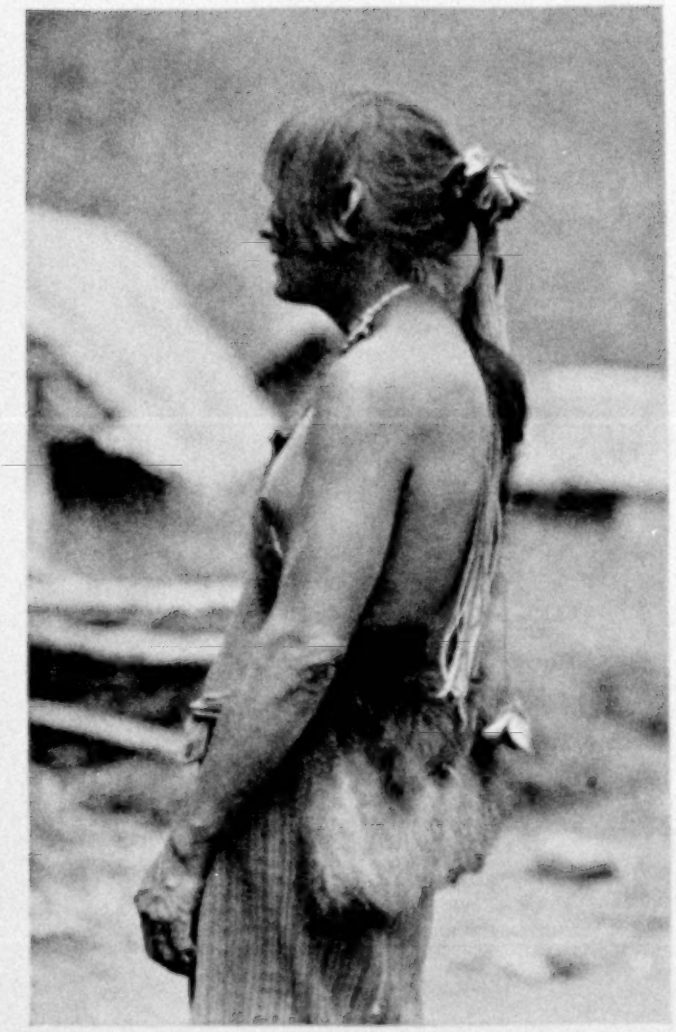
A YANKEE-BUILT RAILROAD FROM GUAYAQUIL TO LOFTY QUITO

The Rockefeller Foundation took in hand the cleaning up of this city, with the result that now yellow fever has practically disappeared and the bubonic plague is kept well in hand. The quarantine against the port has been lifted, Guayaquil is once more a stop on the maritime itineraries, and the Ecuadorean has a reverence and a faith in the "gringo medico" almost as strongly fixed as is his religion.

Coincident with this improvement in the hygiene of the city, new streets have been built and new buildings erected, so that Guayaquil is rapidly forging ahead.

Ecuador has in operation a railroad with a terminus at Guayaquil and at Quito, with plans and some of the work completed for extensions to other points. The track climbs up from sea-level to an elevation of nearly 11,500 feet, and over much of its journey to Quito it negotiates very heavy grades and sharp curves. As a piece of mountain railroading it is worthy of much comment, and it is Yankee-built.

The trains of the Guayaquil and Quito Railway need two days for the climb up to the capital, and at the end of the first



HEAD-HUNTERS HAVE MARKED HIM FOR THEIR OWN

This is Martin, one of the most influential of the Jivaros. He was rather better versed in Spanish than any of his fellows, and appeared to be quite intelligent. After the American party left Zamora the author learned that there was afoot a plot to kill this native, which was causing grave concern among his friends. A raiding party was expected from an adjacent river. The author left while the issue was still in doubt.

day all the passengers alight at Riobamba and stop overnight at the hotels there.

Riobamba is a medium-sized town, with several hotels and a fair number of shops. It lies in a very rich and fertile valley, and because of its strategic position with regard to the railroad, being a junction point, it is rather an important place.

UNUSUAL MARKET METHODS IN ECUADOR

The most interesting feature of the city is its public market, in an open square. Scattered over the ground are groups of Quichuas and a few Spaniards, with a great variety of things for sale.

In one corner of the market are the butchers, with beef or pork on display, the beef haggled and chopped up with a complete disregard of joint or bone, the pork not infrequently sold as a whole roast pig. Next to them may be the millers—women seated on the ground with a row of opened sacks before them, in which may be seen flour made of wheat, barley, corn, or peas, the dealer measuring out the flour in a tiny cup or perhaps weighing it with a crude balance.

The common trade balance of Ecuador is a short stick carrying a suspended pan at each end and held up by a cord about the center. The weight is a rock about the size of a man's fist, and, while no two of them are ever the same size, the merchant is always prepared to pledge his honor that the stone weighs a full and exact pound.

The price for a commodity is almost never fixed, and as the Ecuadorean is always prepared and expects to come down somewhat from his first price, it speaks worlds for his optimism that he invariably tries to get more. The bargaining does not actually begin until you have disregarded the first figure and asked, "What is the last price?" ("el ultimo precio?") In fact, I have been told voluntarily, when pricing ponchos, that the price was twenty-five sucres, but "I can come down a little."

QUITO, ON THE EQUATOR, HAS AN INVIGORATING CLIMATE

Quito is almost as large as Guayaquil, but because of its invigorating climate it has a far more healthy environment, and the city itself seems to disclose more vigor among its citizens.

It is situated on a plain, at the foot of Mount Pichincha, and, when the air is sufficiently free from clouds, I am told that it is possible to see eleven snow-clad peaks from the city. Because of the elevation of Quito, some 9,375 feet above sea-level, some of these peaks do not appear to tower very high; nevertheless they are a beautiful sight, seen across the rolling green hills of the Páramo.

The streets are paved with stone, for the most part, and are rather better kept than those of the average Spanish American city. Quichuas throng the city, do-

WEAPONS OF CIVILIZATION AND SAVAGERY: RIFLE AND BLOW-GUN

These Jivaros accompanied the author's party from Zamora to Loja, a three-days' journey. The Indian with a bandaged leg had recently become a successful head-hunter and refused to eat any meat, in accordance with tribal custom. The others were restricted by no such deterrent, and the photograph shows a bird ready to be cooked.

ing all the burden-bearing. Dressed in their picturesque ponchos, they give to the city the aspect of a frontier town, an aspect rather belied by the flourishing business of the cinema, where we saw our own Pearl White thrill the emotional Ecuadorean to the point of wild enthusiasm.

Quito is by far the most attractive city in all Ecuador, and the traveler is loathe to leave it, if his stay has been a short one.

LOJA, METROPOLIS OF SOUTHERN ECUADOR

Because of their inaccessibility, the interior towns are apt to be more picturesque, more untrammeled by civilization in its final manifestations. Such a city is Loja, the modest metropolis of southern Ecuador, with a population of perhaps ten or twelve thousand souls.

The educated class of the Lojanians, the Spaniards, are very punctilious in the observance of dress, and it is a common sight to see a citizen clad in very proper Prince Albert, with a tall hat, cane, and resplendent shoes, picking his way over the uneven cobbles, rubbing elbows with a scarlet-ponchoed Quichua or crowding by a group of Cañari Indians, with their hard woolen hats, which look like dirty, disreputable derbies.

Two small streams flow through the city, the Rio Malacotas and the Rio Zamora, destined to become part of the Amazon, and it is well worth a walk to one of the bridges over these rivers to watch the townspeople bathing and washing their clothes. Every one enters the water with his clothes on, and by dint of a great deal of splashing evidently is able to overcome the handicap of this covering.

Probably the most important of all these interior cities of the interandean region is Cuenca, to which a railroad is being constructed.

There are numerous small towns of only a few hundred population, where the arrival of a traveler from the outside world is a great event. The passage of such a

A RESTING PLACE ON AN ECUADOREAN TRAIL

Under the eaves of the red-tiled roofs, the *arrieros* (muleteers) have tied a mule train, where the patient animals may stand all day. A woman with a jar is entering one of the houses, having been to the public water supply, an open stream which flows through the center of the little town.

WELCOMING A NEW BISHOP TO LOJA

The Ecuadoreans make much over all religious celebrations, and when a new bishop of Loja was appointed the whole city turned out to do him honor. Not only were the streets decorated, but as he came to Loja from Cuenca, about a week distant on Andean trails, he found decorations along the way, miles from any town.

XUM

CHILDREN ARE CARRIED IN A SHAWL OR CLOTH SLUNG OVER THE SHOULDER OR NECK OF THE MOTHER

So secured, the child is held comfortably and safely and the hands of the mother are left free. Ecuadorean children are solemn little things and do not play as northern children do.

SPINNING IS A HABIT WITH THE NATIVE WOMEN AND ONE THAT IS ACQUIRED AT AN EARLY AGE

In the lowlands, where cotton is grown and the heat of the region demands lighter clothes, all of the spinning is done with this staple, which is drawn out into very fine threads.

MILLER'S ROW IN THE MARKET-PLACE OF RIOBAMBA

In the public markets the different commodities will often be found segregated in districts. In Riobamba, the center of a cereal region, the display of flours was rather noteworthy. Flour is made of wheat, barley, corn, and peas in Ecuador.

AN ECUADOREAN POTTERY EMPORIUM

Much of the ware for sale is displayed out on the street. At this booth the owner is featuring the heavy red pottery and the cheap basket-work of the region. Clay suitable for pottery and tiling is found everywhere in Ecuador and put to a serviceable use.

IF HE STANDS ON THIS CORNER, SOONER OR LATER THE VISITOR SEES ALL THERE IS OF INTEREST IN LOJA

It faces the *plaza principal*, where certain favored ones maintain small booths and sell things to eat, drink, or wear. Just up the street is the rendezvous of the city, the cinema, an open-air enterprise held in the interior courtyard of one of the houses, where the films are run at half speed to make them last longer.

PREPARING A HOLIDAY MEAL IN LOJA

During the time of the fiestas, when the small towns are crowded to the utmost, many of the natives do their cooking out on the open plaza or in the market-place. Often small "restaurants" are conducted in a similar fashion, the patrons squatting about on their heels to be served from two or three large utensils kept over a small fire.

XUM

THE MAIN STREET OF LOJA, METROPOLIS OF SOUTHERN ECUADOR

It is fiesta time, and all day and most of the night people throng the principal thoroughfare, passing with mule-loads of merchandise, collecting about the stores and street booths, or gathered in convivial groups about the liquor stores. Every one is dressed in his best, from the merchant in his sedate black suit to the Quichua in his brilliant poncho. The street is alive with color, from the sky-line, where the brick-red tiles stand out from the fluffy white clouds, to the ground itself, where the itinerant peddlers have spread bright ponchos and heaped thereon little piles of cheap trinkets.

SELLING BREAD BAKED IN THE SHAPE OF ANIMALS FOR ALL SAINTS' DAY IN LOJA

Dough is worked up into the shapes of people and animals of the fields to sell for this feast day. While many of these figures require a dutiful imagination and a word or two of explanation to determine the identity of the representation, they appear to be high in popular favor. One might imagine that the dog in the picture had espied a canine friend in dough, but it would, perhaps, be nearer the truth to state that he is doubtless contemplating a bite out of the plump outlines.

one calls forth all the able-bodied inhabitants and furnishes the main topic of conversation for several days, provided the traveler has the customary type of muleteer, a talkative one, who will tell all about his patron's errand in the region.

The people of Ecuador are very religious and most of them are of the Catholic faith. Every little village has at least one church, and the larger towns have many; so that, even from a distance, the most conspicuous edifices are the churches, for their spires and belfries overtop all other buildings.

MERCHANTS TAKE ADVANTAGE OF IMPORTANT FIESTAS

There are numerous fiestas to be observed, because, in addition to the celebrations ordained by the church at large, there are many local saints and virgins for whom the devout natives are always willing to declare a holiday.

There are several important fiestas held annually in the interior cities, and merchants send wares from a long distance to take advantage of the crowds which flock into town on these occasions. These throngs which gather around the stalls and booths, clad in their gala attire, present a picture radically different from any to be seen north of Spanish America. Everywhere the eye may rove, it will be arrested by quaint costumes or bright patches of gaudy color.

The men are resplendent in brilliant new ponchos, the women in shawls, generally blue or green, while, ever shifting and mingling in kaleidoscopic effects, will be seen flaring yellows, deep purples, flaming reds, and startling greens.

This pattern is broken up at frequent intervals, and the crowds scatter when, with a great clattering of hoofs, the gallants of the town come riding along the cobble-paved streets, spurring their horses

A LOJA CHURCHYARD OFFERS HOSPITALITY TO MULE TRAINS

or mules at a fast gait, and reining strongly to force the beasts to arch the neck and curvet, with the result that they go slithering and plunging, to the great detriment of the bystander who does not give way or who stands too close to a puddle.

During the fiesta of All Saints' Day the people drink quantities of an unfermented rice wine and purchase bread baked in a great variety of shapes to represent men, birds, horses, and other animals.

THE QUICHUAS ARE A STURDY PEOPLE

The majority of the people one sees in Ecuador are Quichuas, a sturdy people rather short in stature, but well built and stocky. In color they closely approximate our North American Indians, but their features are less stern and warlike. They do most of the labor of the republic and serve as porters, drovers, farmers, etc. The women labor as hard as do the men and take their places alongside them in the fields.

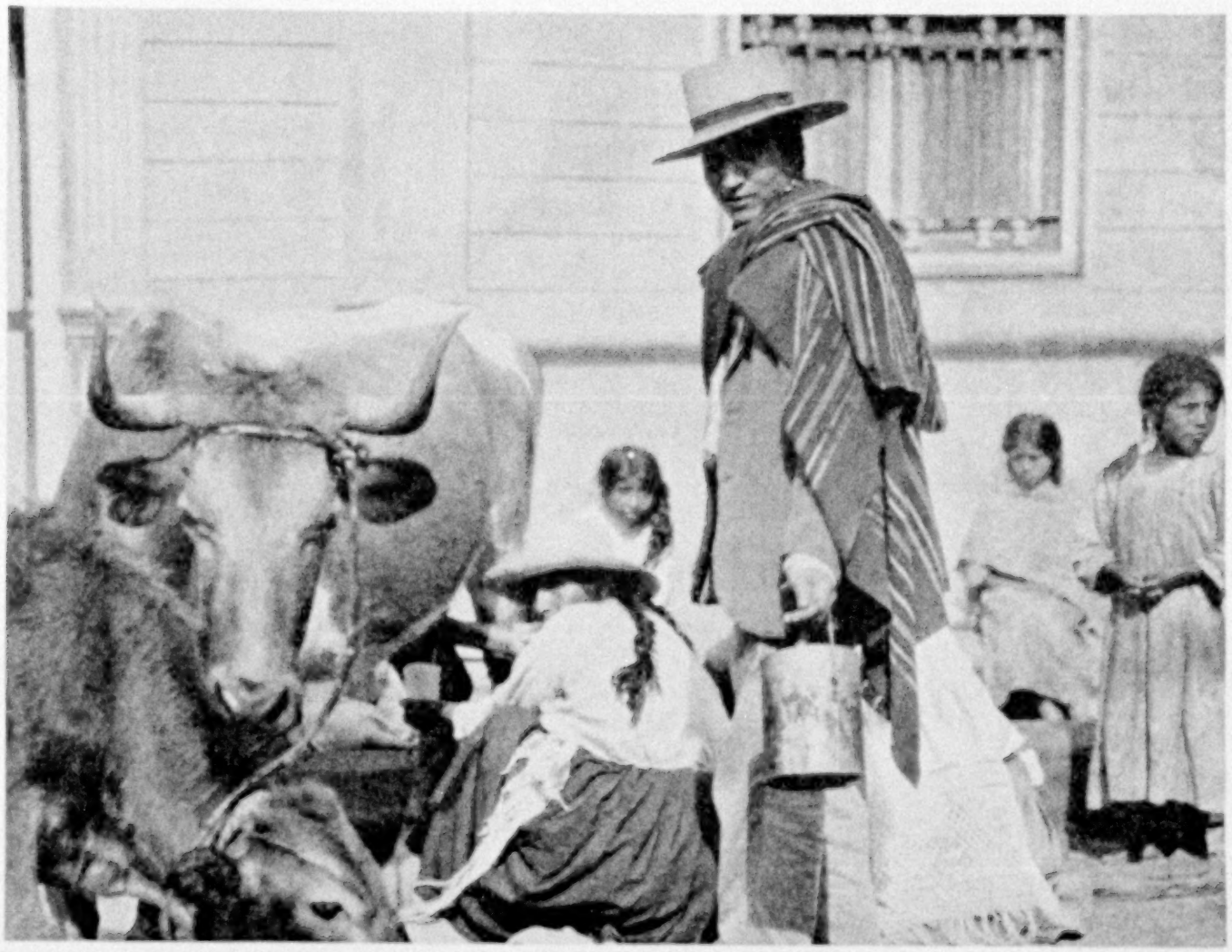
The costume of the Quichua is quite characteristic and picturesque. The principal garment of the man is the poncho, which he wears over the shoulders and allows to hang down to his knees, over a shirt and trousers made of coarse homespun.

The woman wears a cape-like garment in place of the poncho, and a voluminous skirt gathered in to form a bulky zone about the waist.

A FARMER MUST BE AN ACROBAT TO CULTIVATE HIS STEEP FIELDS

Both men and women go barefoot habitually, but have sandals made of rawhide to wear over the rocky places.

These people are exceedingly industri-



THE MILK-DELIVERY SERVICE OF LOJA

That there may be no question as to the freshness of the milk, it is drawn to order. The calf is taken along to act as a starter, but has its nose thrust aside when once the cow has been beguiled into letting down milk.

ous and persevering, but still hold to primitive methods that are wasteful in the extreme.

While the soil of Ecuador is very fertile in many places and both plant and animal life thrive, the topography is often such as to make the securing of a livelihood a constant struggle on the part of the Quichua, and many cultivated fields are seen on hillsides so steep that a man must be an acrobat to work in them.

Nowhere have the primitive methods persisted more steadfastly than in agriculture. Much of the plowing is still done today with wooden plows, which are merely sticks lashed together, a long one to serve as a pole and a short one fastened at an angle to scratch up the ground. Such shallow plowing fails to develop the resources of the soil, and the yields are low. Planting methods are equally laborious and unsatisfactory.

Because of the numbers of mules, horses, cattle, and goats that roam at will near the settled areas, the farmer must see to it that his fields are adequately fenced. In some places substantial fences are built of stones piled one upon another, and when these are not at hand, a substitute may be found in blocks of adobe; but the greater number of fences are formed of rows of the century-plant, or *cabuya*. The robust growth of the century-plant, the vigorous green of the leaves, and the striking appearance of the tall flower stalk combine to make these fences a pleasant feature in a landscape which otherwise would often be dull and uninteresting.

THE FARMER'S WIFE AND CHILDREN TRAMPLE OUT THE GRAIN

When cereals are ripe, they are cut by hand and brought in to the threshing-floor, which is a level, carefully cleaned spot. If it be wheat that is being har-

THRESHING A HANDFUL OF WHEAT

It is obvious that the farmer attaches value even to such a meager quantity. It will represent the labor of himself and his wife for half a day.

WINNOWING THE GRAIN

While her husband flails the straw for the last few grains, the wife goes over the chaff, a bowlful at a time, to separate the wheat. It may be noted that the chaff is blown by the wind out of the line of falling wheat. This woman feared to pose before the camera, but eventually consented, to please the "Gringos" who wanted the picture to show to their people.

CROSSING A CRUDE NATIVE BRIDGE WHICH SPANS THE UDUSHAPA RIVER

The interandean region is cut up by many streams. Often they have cut great gorges or ravines with steep slopes and eroded configurations. The gorge of the Udushapa is a wild region, a deep gash into the high plateau, where heavy rains bring down a turbid torrent.

vested, the stalks are piled up to a depth of a foot or two and domestic animals are driven around and around over them.

Any animal may be used, and, if the farmer is poor and has but a small harvest, his wife and children may trample out the grain. The ripened grain is easily shaken and broken out of the husk and gradually sifts down through the coarser chaff.

The winnowing is done with the aid of the wind. Bowls of the mixed grain and chaff are poured out from the height of a man's head, and the wind whisks the light chaff to one side.

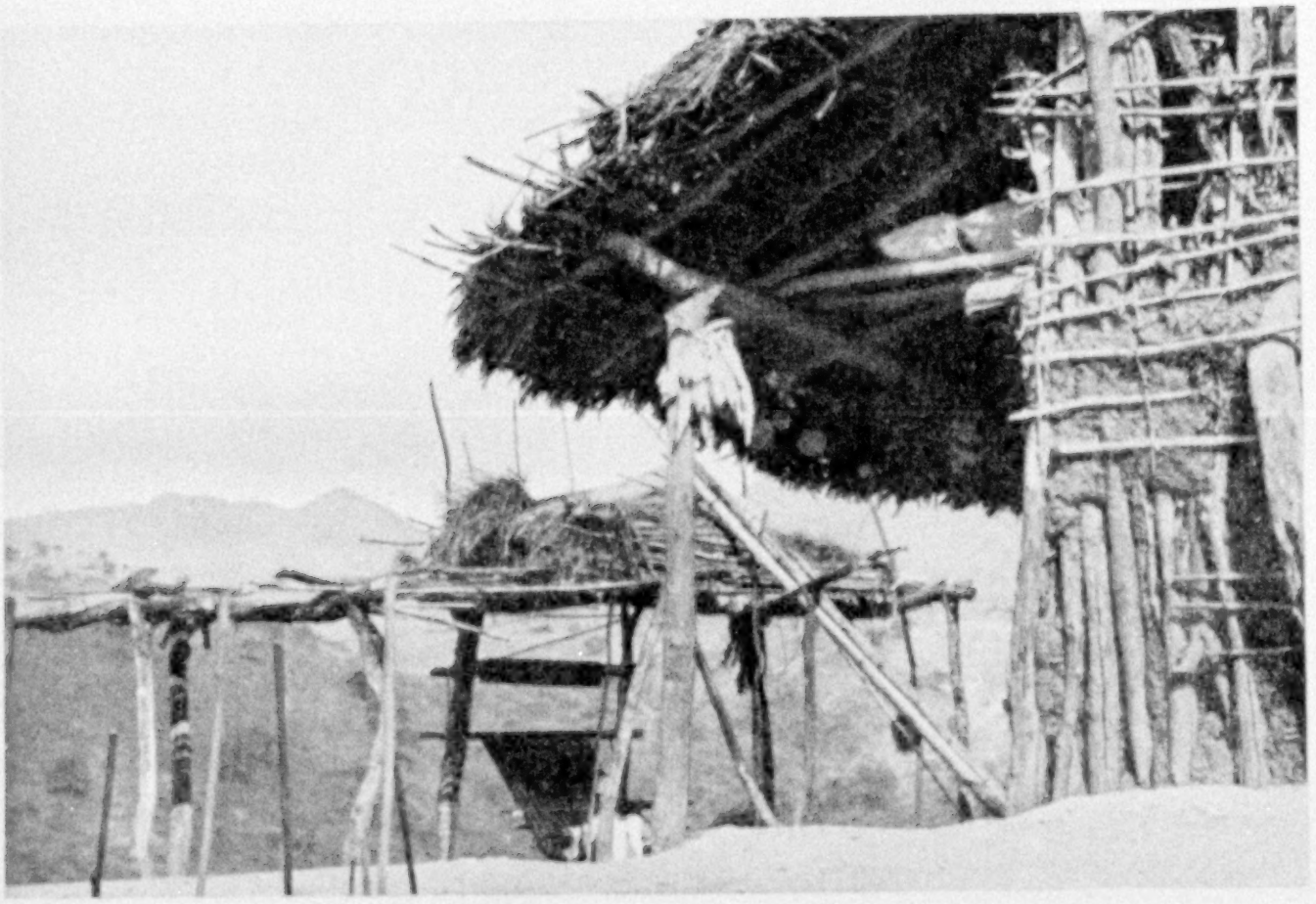
Mills for grinding grain are available in the more thickly settled districts, but in many places wheat, barley, corn, peas, etc., are ground up into flour and meal upon flat stones by hand. Practically every step of harvesting, of whatever crop, is done by hand in the rural districts, and even such a task as picking over minute grains of rice does not seem to daunt these people.

Almost all of the sugar used by the natives of Ecuador is of their own manufacture. The sugar-mill consists of a series, two or three, of wood or brass rollers, operated by a long sweep, to which is hitched a yoke of oxen or mules. A child drives the oxen around their endless course and keeps them from stopping completely, although their pace is snail-like at best; nor is it accelerated by the fact that the small driver is generally engrossed in personal sugar-milling on a small scale, with a long section of the juicy cane clutched in one fist.

The juice from the rollers drops down into a trough which carries it into a receptacle at one end of the shed, and thence it is conveyed to a huge copper kettle to be boiled down and eventually form small brown cakes of crude sugar.

THE QUICHUA WOMAN IS ALWAYS SPINNING

The Ecuadoreans keep many sheep and goats and most of the Quichua clothing is made from the wool the Indians themselves raise. In the higher Andean valleys this wool is long and of a fine texture, and a rather unusual feature is the



A NATIVE WOMAN AT HER LOOM OUTSIDE HER HUT IN THE CASANGA VALLEY

In this hot desert region the little thatched huts are perched upon the summits of the low, rounded hills which dot the floor of the valley. On these eminences they are above the mosquitoes and flies. The platform over the loom is built as a support to keep corn above the ground, out of the way of rats and mice.

number of the black sheep seen in the flocks.

Every step in the manufacture of cloth from wool is taken by the Indians in the time-honored hand processes. The Quichua woman is an inveterate spinner, and everywhere she goes, if her hands are not otherwise occupied, she is engaged in spinning. Her distaff is a rough stick and her spindle a fine splinter of cane, with a potato or similar object stuck on the end to give weight and momentum to the twirling axis.

THE WORLD'S FINEST PANAMA HATS ARE MADE IN ECUADOR

The yarn is put on to a hand loom and woven into a close, tight fabric of very creditable appearance.

The ponchos loomed by the Quichuas are beautifully made, warm garments and their coloring is often harmonious and tasteful. There is considerable difference in the texture of the material made in the different sections of Ecuador, the finest, smoothest ponchos being those from the high Andes about Quito, where the best wool is raised.

In the warm lowlands cotton is grown and worked up into textiles in a similar fashion, the cotton yarn being spun in finer diameters, as a rule, than the woolen yarn.

Still another fiber is obtained from the *cabuya*, or century-plant. It is long and strong and is used to make rope, being almost identical with the "sisal" grown for rope in Central America.

The Ecuadoreans are very skillful at hat-weaving, and make not only the cheap hats for the laboring classes, but the world's finest Panama hats, the centers of the latter industry being Montecristi and Jipijapa.

ECUADOR IS RICH IN ANIMAL LIFE

Ecuador is rich in animal life. Many of the forms are so similar to the life we see about us in the States as to occasion little comment or wonderment, but many

THE ECUADOREAN LOOM IS A CRUDE BUT MOST INGENIOUS CONTRIVANCE

The yarn is drawn taut by the weight of the woman, who sits in a broad web at the bottom of the loom. Although only simple designs may be woven on this pattern of loom, very harmonious blending of colors and shading are often noted.

others are strikingly different and certain to arouse interest.

In common with all tropical countries, Ecuador has an abundance of invertebrates, hosts of insects and creeping, crawling manifestations of life.

In the lower elevations mosquitoes are often a serious menace, since both *Anopheles* and *Stegomyia*, fever-carrying genera, are common; but as soon as any very great elevation is attained, the danger from mosquitoes is practically nil. The hot lowlands are the home also of myriads of ants, in numbers seldom to be found in northern climes.

The brilliant butterflies seen in so many tropical countries are present in great variety in Ecuador, and one of the pictures most apt to be carried away in the memory of the visitor to Ecuador is that of a huge blue *Morpho* floating aimlessly through the dark-green jungle vegetation.

The brightest bits of color one sees, however, even vying with the orchids, are those produced by the plumage of some of the birds. The avifauna of Ecuador is very rich and it is especially so in species of striking or gaudy coloring.

HOME OF THE HUMMING-BIRD

Probably in no other country of the world are there so many species of humming-birds, and nearly every one is beautifully marked. Brilliant metallic greens, iridescent blues and purples, clearest crimson, and snowy white are all to be found in the plumage of these buzzing, meteoric bits of bird life, and their activity is such that they are made doubly conspicuous.

When one thinks of the Andes the bird which is inevitably associated is the condor, the largest of the flying land birds. While the condor is found in Ecuador, it is a bird of the higher elevations, and so is not often seen by the casual traveler.

Once seen in its native surroundings, the condor will never be forgotten, and I shall ever treasure in my mental picture-gallery the sight of one which passed over our party at a height of less than one

VISITORS AT THE AMERICAN PARTY'S CAMP IN THE CORDILLERA DE CHILLA

The Ecuadoreans are a very friendly people and fond of paying visits. This family arrived very early in the morning, when the author was absent, but waited for his return at noon, and then spent the afternoon. To these dwellers of the interior Andes the tin cans which were thrown out from the camp were as gifts from the gods, and the camp never suffered from an accumulation of such things.

hundred feet. It was early morning and cold, the trail was over a high, interandean plateau at about 11,000 feet elevation, and I sat on my saddle mule, bundled up and trying to keep warm, while overhead a great black bird, seemingly superior to those forces of nature which were so bleakly apparent to me, sailed majestically up into a stiff wind, rocking slightly to the gusts, its only visible wing movement a slight spreading or closing of the primaries.

DENSE FORESTS ON BOTH ANDEAN SLOPES

Along the lower slopes of both the Western and the Eastern Andes are to be found great expanses of forest, that of the Eastern Andes extending unbroken for many hundred miles.

A forest of this type at its best is a dense tangle of vegetation, a green mantle which covers the hillsides so completely that it is impossible for any one looking out over the landscape to see a square foot of open ground.

The principal forest trees are large and very tall, most of them of a type that branches widely, so that the leaves form a continuous canopy overhead.

Most of these trees are varieties unknown to northerners, among the commoner of them being the rubber-tree, wild fig, silk-cotton, or ceiba, and mahogany.

Many of the trees have great, wide-flung root systems, which send out writhing members, like the tentacles of an octopus, to twist about and seek out any crevice on the hillside.

AN ENDLESS NETWORK OF CREEPERS

Smaller trees establish themselves under the forest giants wherever enough sunlight filters through the mosaic above to support them.

Over all of the trees, large and small, runs a vast and seemingly endless network of creepers and vines, *bejucos* the natives call them. These lianas are of all sizes and descriptions, from the merest thread-like filaments to hawser-like vines

GIANT FERNS OF THE ECUADOREAN JUNGLE

Great banks of these plants thrive in the damp, dark shelter of the jungle, being similar in appearance to some of our northern ferns, much enlarged. The graceful curves of the fronds, the delicate detail of the smaller structures, and the refreshing greenness of their color, all contribute to create a lasting impression upon any one who sees them at their best.

XUM

THE HONEY-BEAR OF ECUADOR IS A FRIENDLY LITTLE BEAST

With no immediate relatives in the United States, the *kinkajou* (or honey-bear) can be likened to no animal of popular knowledge. He is nearest to the raccoons in structure, but is a much prettier, more graceful animal. *Kinkajous* make charming pets, with their soft, close fur, a golden yellow in color, large, expressive eyes, and hands that are as capable as those of a monkey.

of great strength; and they mount serpent-fashion around the tree trunks or go searching head downward in fantastic loops and free swinging ends.

Parasitic air-plants, bromelias and orchids, grow in profusion upon the limbs and trunks of the trees, and mosses and ferns take advantage of every possible foothold. Many of the large trees carry on their limbs a greater mass of parasitic and epiphytic growths than they do of their own foliage.

THE HOWLING MONKEY HAS A TERRIFYING BELLOW

The bromelias serve as catch-alls for the falling leaves and debris from above, so that the crotches of the large boughs support great collections of humus and miniature forests of orchids and dainty, graceful ferns.

The howling monkey, more than any other animal, typifies these vast, unbroken forest areas, for it is absolutely dependent upon continuous forest; and its call leaves a more vivid impression upon the listener than any other noise of the jungle.

The call, given oftenest just before or during a rain or when the troop is alarmed, is a heavy, reverberating bellow, which fills the forest with its volume and at times seems to make the very air shake.

There is something sinister about the call of this monkey which makes one imagine that it is made by a very large and powerful creature.

Other mammals of interest in Ecuador are the spectacled bear, the only representative of the bear family found in South America; the tapir, the largest quadruped native to the Southern Continent; the jaguar, the beautifully mottled and spotted ocelot, the peculiar, long-snouted anteaters, the kinkajou, the coatimundi, and a great variety of opossums.

There are many varieties of harmless snakes, from small grass-snakes and slender, green tree-snakes, up to the boas, which may be fifteen feet or more in length. The two principal snakes of venomous attributes are the fer-de-lance, and the coral snake. The Indians of the *Oriente* are said to have an antidote for the bite of these reptiles, a plant which grows in the jungle there.

A LAND OF ONE RAILROAD AND MANY TRAILS

Ecuador might be truthfully called the land of trails; for, aside from the one short piece of railroad, almost the whole republic is dependent upon mule trails as lines of communication. Especially is this true of the central and southern parts of Ecuador, where the towns and villages are separated from one another by several days' travel over terrific mountain trails.

The Ecuadorean trail is something that must be traveled to be appreciated. In the open areas, where the field of vision is extensive, almost every ridge will be seen to carry a trail, which stretches off like the folds of a gigantic serpent crawling over the mountains. It is seldom that one is restricted to a prescribed route; he may take a choice of trails.

One *sine qua non* of these trails is that they must climb—it makes no differ-

ence whether up or down—and so the traveler soon learns to look ahead and forecast where his route will lie. He may be certain, beyond all peradventure of a doubt, that it will cross the highest ridge in his horizon.

Because of the steep slopes of the mountains, there are only two possible places for a trail, as a general rule—one up the valley of some stream, the other along the crest of the mountain range.

THE TRAVELER HUMORS HIS MULE ON THE HIGH TRAILS

It is not always easy to say which practice is most to the liking of the wayfarer. From Santa Rosa in to the mines at Portovelo, we crossed the Rio Santa Rosa twenty-two times in one half day, when the trail followed up the cañon; while on another jaunt, north along the interandean region, where the trails keep to the ridge crests, we frequently climbed laboriously up to 12,000 feet only to find a deep river gorge ahead, which meant a descent to 7,000 feet and the climb all to do over again.

The traveler can ride mule-back over most of these trails, although occasionally a short stretch may be encountered where it is politic to walk. The trails frequently ascend and descend in the steepest of pitches and often run for long distances along the edges of precipitous slopes, where a misstep means a fall of two or three hundred feet before even the first bounce and perhaps a thousand to the very bottom. In such places it is best to humor the mule.

Disagreeable stretches of a different nature are found where the rains soften the surface of the trail, and the feet of the mules cut it up into a succession of ridges and furrows, known locally as *camellones*. The animals go sloshing over these *camellones*, stepping high over the ridges and slopping down into the furrows, which are often knee- or belly-deep.

FEW LLAMA TO BE SEEN IN ECUADOR

It is over such trails as these that all the commerce of interior Ecuador is carried, and the Ecuadorean has come to be very expert as an *arriero*, or driver of mule trains.

BUT NO ONE EXTOLS THIS KITTEN'S DISPOSITION

The cougar, or puma, is not rare in Ecuador, and in some regions is apt to prove destructive to domestic stock. The governor of the Province of Loja had this kitten as a pet, and even at such a tender age it is possible to note the parentage in the lines of the head and the large paws.

The mule is the prime favorite as a pack animal, although some horses are used and numbers of donkeys may be seen. About Riobamba a few llamas were seen; but this animal is almost a curiosity in Ecuador and is not the common animal that it is in Peru.

The mule can carry one hundred pounds on a side, a total of two hundred pounds to the animal, or, on good trails, up to three hundred pounds, and, if an arriero is clever, it is possible to take some amazing cargoes in over the trail. I have seen steel cable going in to the mine when it took fourteen mules to carry one section. Each mule had a few coils on its back, and then the cable ran back to the next animal, and so on down the line.

ONCE A PART OF THE GREAT INCA EMPIRE

Pianos have been taken over the Andean trails where it required one hundred peons a month to bring such a cumbersome burden to its destination.

XUM

The early history of Ecuador is a most interesting and romantic one. Under the Incas, it was a part of the great Empire of Peru, and the northernmost stronghold of Indian power was at Quito. Inasmuch as a great deal has been written of early Peruvian history and the pages of this magazine have set forth considerable of the Inca narrative, the repetition of the general account will not be attempted here.*

The Spaniards, at the earliest opportunity, spread out and overran Ecuador in their search for treasure, both in its natural state and as it had been gathered by the Incas.

The first of the discoveries of any importance resulted in the establishment of the famous mines at Zaruma, in southern Ecuador. Here, just prior to 1550, the whites found a region so rich in gold that men were set to work to dig it out.

In the early days the gold was extracted by crude methods and inefficient equipment, but today, under an American company's management, the camp is a model of up-to-date methods and a demonstration of what Yankee energy and initiative can accomplish in the tropics. A forty-stamp mill runs day and night, while the ore is treated in vast cyanide tanks, with a capacity of several hundred tons per day.

A large force of natives, under American supervision, brings up the ore from depths as great as 900 feet or from outlying workings on adjacent hills. Hundreds of mules wind in over the two-day trail from Santa Rosa, the port of supply for the Zaruma district, each month, a continuous train of supply being necessary to keep the camp going, for everything that is consumed must be brought in by pack animal.

Concrete houses, well screened, shower baths and a swimming pool, tennis courts, distilled water, ice, electric lights, and a hospital—all these combine to make the mining camp of Portovelo an oasis of Yankeeland in a desert of undeveloped Spanish America, and the generous hospitality of the company officials makes a sojourn at this oasis doubly attractive.

A fabulous sum of gold has been taken from the Zaruma region in the course of the last three and a half centuries, and there are probably upward of fifty miles of workings in the hills thereabout.

FEW EVIDENCES OF INCA OCCUPATION

The evidences of Inca occupation have been for the most part extirpated, evidently much more so than in Peru, for only here and there can one see portions of the old highways. Of course, it is not improbable that extensive areas of Inca construction have been so overgrown that they would not be apparent without much expenditure of labor in clearing away and cutting down forest.

There are said to be Inca ruins not far from Zaruma, on a very steep and heavily wooded mountain, rather inaccessible and difficult to investigate. The natives say that on top of this mountain there is an enchanted lake, and they give as unmistakable proof that it *is* enchanted the fact that it always disappears when any one climbs to the summit to see it! Could any one ask for more irrefutable evidence?

AIRPLANES MAY AID ECUADOR

Ecuador is today one of the least developed of the South American republics, this condition being due in a large measure to the rugged topography of the country, which makes construction of roads and railways an almost prohibitive procedure, and to the fevers and plagues which acted as a deterrent to outsiders who might have wished to develop the region. Now the latter have been mastered to such an extent that they should no longer be a vital factor, and the Ecuadorean Government is wide-awake and anxious to encourage foreign capital to give it help for the development of its abundant natural resources.

As a mark of the attempt to keep abreast of the times are the flights made across the Andes by airplane, and it is not inconceivable that with the development of airplane transportation the difficulties of terrain will be overcome as well.

* See "In the Wonderland of Peru," April, 1913; "The Story of Machu Picchu," February, 1915, and "Further Explorations in the Land of the Incas," May, 1916, by Col. Hiram Bingham, and "Staircase Farms of the Ancients," by O. F. Cook, May, 1916.

OVER THE ANDES TO BOGOTÁ

By Frank M. Chapman *

Curator of Birds, American Museum of Natural History

THE lure of Colombia's manifold resources has long exerted its influence on the prospector, whose love for exploration is tempered by a desire for some tangible return for the effort expended. Gold and platinum, ivory nuts, rubber, orchids, and, more recently, oil, have all drawn hundreds of eager seekers for wealth to her vast and varied territory.

But to those who love travel for the wealth of experiences it may bring, who revel in glorious scenery, who find fresh interests in new or strange forms of vegetable and animal life, and in the customs of foreign peoples, Colombia is almost an unknown land.

Cartagena is occasionally visited by tourists, and Santa Marta, lying at the base of the superb group of snow-crowned mountains of the same name, may be known to those who travel on fruit-bearing steamers; but Barranquilla, the metropolis of northern Colombia, is twenty miles from the sea; Buenaventura and Tumaco, her only Pacific ports, are not familiar as names to even most traveled people, while Bogotá, her capital city, with a population of 130,000 or more, seems as remote as Lhasa.

This is all wrong. It is high time Colombia's attractions for the tourist were more widely known, and as a means toward that wholly desirable end I propose to outline here a Colombian tour, on which any one who can sit astride a mule may embark with the assurance that he will not be exposed to more hardships than the traveler off beaten trails expects to find. In retrospect these minor discomforts often become positive pleasures, or, at any rate, the bases of those tales without which travel would be merely uneventful transportation.

NO RISKS TO LIFE, LIMB, OR PROPERTY

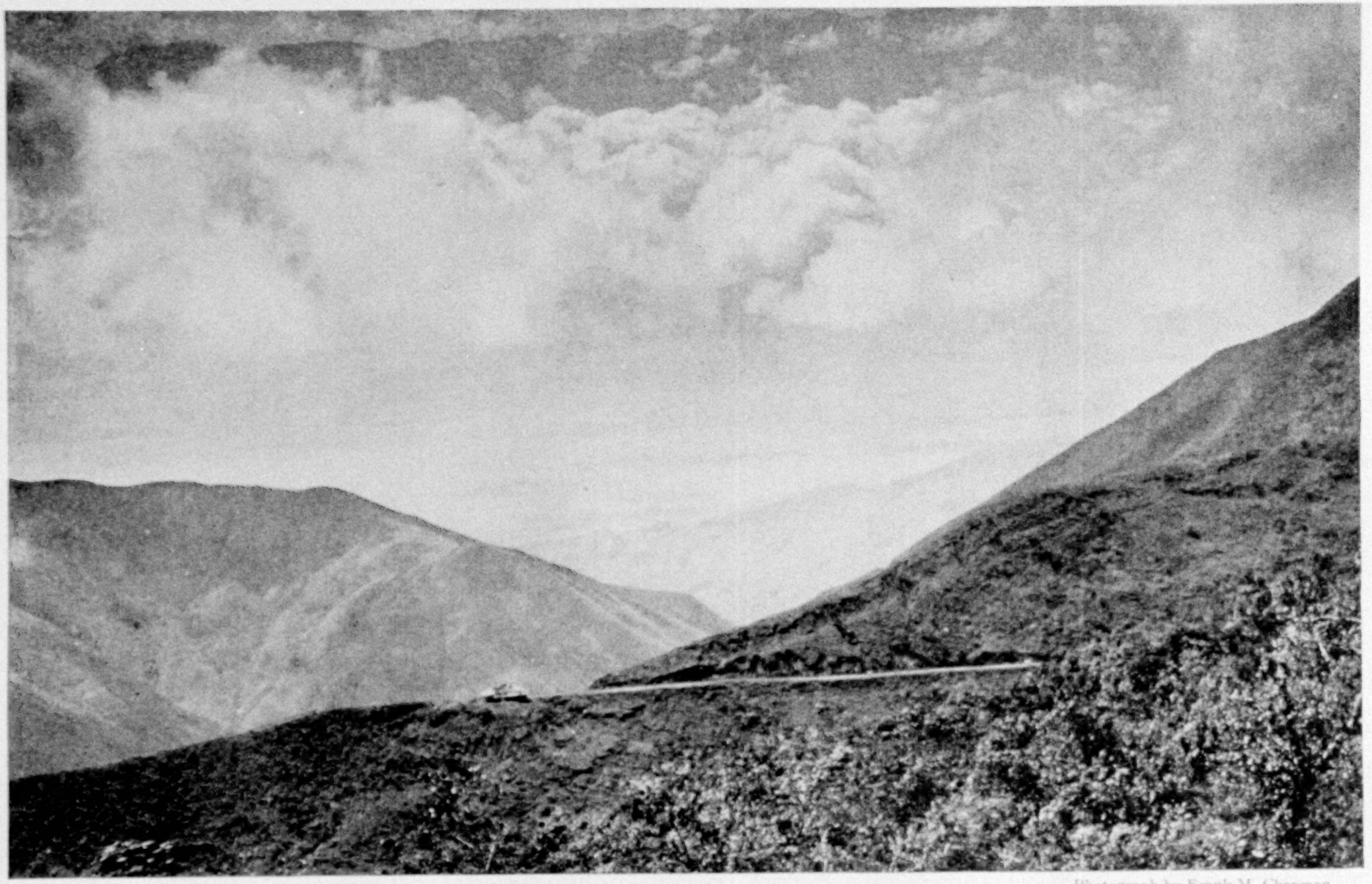
As for risks to life and limb, I know of no safer country than Colombia. The "hold-ups" and other forms of highway robbery of daily occurrence in many large cities in the United States are practically unknown in Colombia.

During the six years when parties from the American Museum explored the republic from end to end, we lost not one single article from an equipment a large part of which—camp utensils, guns, knives, etc.—must have seemed highly desirable in native eyes. Indeed, I recall that on passing through a small town where we had previously established our headquarters a woman ran out to give us a needle and thread one of our men had left sticking in the wall of his room!

Our work brought us into contact with men of every class, and from high and low alike we received only courteous and hospitable treatment. Where we brought letters of introduction, this might have been expected, but where we came unknown and unannounced we were invariably welcomed and given every available facility to pursue our natural-history researches—this, too, it must be remembered, at a time when North Americans, as a nation, were far from popular in Colombia. But I have always found in Latin America that an individual is accepted or rejected on his own merits or demerits without regard to his nationality.

During the World War Colombia is said to have sympathized with the Central Powers, but I know of a city from which a German was expelled because he refused to rise when the band played our National Anthem, while an American, who possessed that measure of tactfulness, courtesy, and consideration for others which are included in the Spanish word *simpatico*, was the most popular foreigner in the town. In a word, then, the traveler may go unarmed, and so long

* From 1911-1915 the author of this article directed a biological survey of the Colombian Andes for the American Museum of Natural History. The results of his researches in field and study are embodied in a 700-page Museum bulletin on the "Distribution of Bird Life in Colombia." In this volume, which was awarded the Elliot gold medal by the National Academy of Sciences, the life-zones of the Colombian Andes are defined and an attempt made to determine the origin of their bird life.—Editor.



Photograph by Frank M. Chapman

CAUCA VALLEY FROM SAN ANTONIO PASS, IN THE WESTERN ANDES, AND, ABOVE THE CLOUDS, THE CENTRAL ANDES

"The curtain of clouds gradually lifted, revealing beneath it the level floor of the Cauca Valley, with gleaming streams and lagoons and varicolored areas of marsh, pasture, and forest. Above the clouds rose the purple summits of the Central Andes."

as he is within reach of habitation, he may be assured of shelter and a welcome according to his deserts.

So far as one's "limbs" are concerned, there is a curious idea current that one is in greater danger in little-traveled, remote places than when at home, whereas exactly the reverse is the case. On hearing that I was about to visit Colombia an accident insurance company in which I held a policy notified me that they should consider their risk canceled until I returned, whereas during the entire trip I ran fewer risks than were encountered in motoring the length of New York City the day of my return!

An American in the Cauca Valley who attempted to drive a carriage rapidly over a mule trail met with a wholly-to-be-expected disaster and broke his collar-bone; but the case was so rare that more than a week passed before the local physicians called in succeeded in discovering the fracture.

In traversing the Andes bits of trail are occasionally encountered which you observe with greater satisfaction over your mule's tail than between its ears, but in the dry season, at least, such places are much less dangerous than they appear to be and, in any event, there is none on our proposed route.

It remains now to speak of the climatic conditions one may expect to encounter as they affect the health, comfort, and transportation of the traveler. So far as temperature is concerned, there is essentially no variation through the year. Observations made at the estate of La Manuelita, in the Cauca Valley, show a difference of only six degrees in the average weekly temperature of the entire year.

A RECORD OF FOUR HUNDRED INCHES OF RAIN IN A YEAR

Seasons, then, near the Equator are not marked by changes in temperature, but by the amount of rainfall. Generally speaking, the year is divided into wet and dry seasons, known respectively as *invierno* (winter) and *verano* (summer), though there is much variation as regards the time and duration of these seasons, particularly in mountainous regions.

There are also areas where it rarely, if ever, rains, and others still where rain falls on practically every day in the year. In the Pacific Coast region of Colombia the wet season is continuous, and there is a recorded rainfall at San José of 400.88 inches. So far as I know, this record has not been exceeded in the Western Hemisphere.

However, we pass through this saturated area by rail, and climatic conditions (provided they do not annihilate roadbeds and bridges) do not concern us. As for the rest of Colombia, we may visit it any time between the end of December and early May with the prospect of finding favorable weather conditions.

EQUIPMENT FOR THE TOUR

A word now on equipment and we shall be ready to embark. Both fall and summer clothing will be required, the former for the Temperate, the latter for the Tropical Zone. Personal effects, in which I should include riding gear and raincoat, may be carried in a small fiber "army" trunk measuring 31 inches in length.

This will form one-half a mule-load; the other half will consist of a folding cot, with two pairs of double blankets, a cheese-cloth mosquito-bar, and enough of one's heavier clothing, all in a large duffle-bag, to balance the weight of the trunk. One pack-mule will carry a small trunk and two sleeping outfits, and thus serve two travelers.

It is advisable to take a saddle, saddle-cloth, and saddle-bags. A small-sized McClellan, fitted with crupper and breast strap and with short girths, will be found serviceable. A dozen would-be purchasers will clamor for this outfit at your journey's end.

It is not necessary to take a supply of food, but a spirit lamp with solid alcohol in tins, bouillon cubes, tea, and a "tea-ball" will insure your having the "makings" of a hot drink when it might not be otherwise available and at a time when it may be vastly comforting. A small supply of quinine, a cathartic, some form of antiseptic, and a package of pyrethrum used dry as a flea powder and burned as a smudge should mosquitoes be troublesome, complete the more special items of our outfit.

In this day of rapidly fluctuating exchange and charges, one cannot speak

XUM

Photograph by Frank M. Chapman

THE WESTERN ANDES FROM THE BRIDGE OVER THE CALI RIVER: COLOMBIA

This river flows through the city of Cali. It is the laundry and bathing-place of a large part of the population, whose aquatic activities form a never-failing object of interest to the stranger.

with exactness of the expenses incident to travel in South America. On my second Colombian journey (1913) I paid $80,000 for ten mules. A Colombian dollar (peso) was, however, then worth only one cent gold, and my mules cost me, therefore, only $80 each.

But mules as well as pesos are subject to variations in value and one cannot predict what they will cost at any given time. Still, one may be assured that the *per diem* charge for travel in Colombia will be much less than in the United States, even if the mileage is not so great. A letter of credit on banks in Barranquilla, Bogotá, Cali, and other Colombian cities may be obtained in New York.

HOW TO GET TO COLOMBIA

Since we propose to follow routes which have been highways of trade for at least four centuries, a deaf-mute with a written itinerary could not go astray on them; but, assuming that the traveler has both the power of hearing and of speech, he will widely increase the range of his experiences, and doubtless add not a little to the gaiety of Colombia by acquiring at least a phrase-book knowledge of Spanish before he starts. In any event, he should take the phrase-book itself, with the certainty that he will not lack for willing, considerate teachers, who, whatever they may do behind his back, will exhibit an astonishing control over their facial muscles in his presence.

These preliminaries disposed of, let us turn to our maps and trace the routes of the several lines of steamers which ply between New York and Cristobal, Panama. Arrived at this cross-roads of commerce at the end of an approximately seven-days' voyage, we disembark to continue our journey to the port of Buenaventura on a west-coast steamer, over whose stern, when docking, we may almost have run our bowsprit.

LEAVE ALL HASTE BEHIND

Who enters the tropics should leave all haste behind. We have a superior way of talking of the land of "*mañana*," quite overlooking the fact that the physiological law of the land is expressed in the "*mañana*" attitude. With the cumulative energy of generations of Temperate Zone born ancestors in our veins, we may maintain our standards of push and speed in the tropics for a time, but that is no reason why we should expect people who have been reared under less favorable climatic conditions to live up to them.

Indeed, it is highly advisable to leave *all* of our preconceived standards at home. Latin Americans have been long subjected to climatic and other influences which have of necessity profoundly affected them both bodily and mentally. We must remember also that, racially, we are as far apart as were the Conquistadores from the Pilgrim fathers.

Let us therefore accept as a fact that our habits of thought are fundamentally different and give to history, tradition, environment, and heredity their share of praise and of blame for existing conditions.

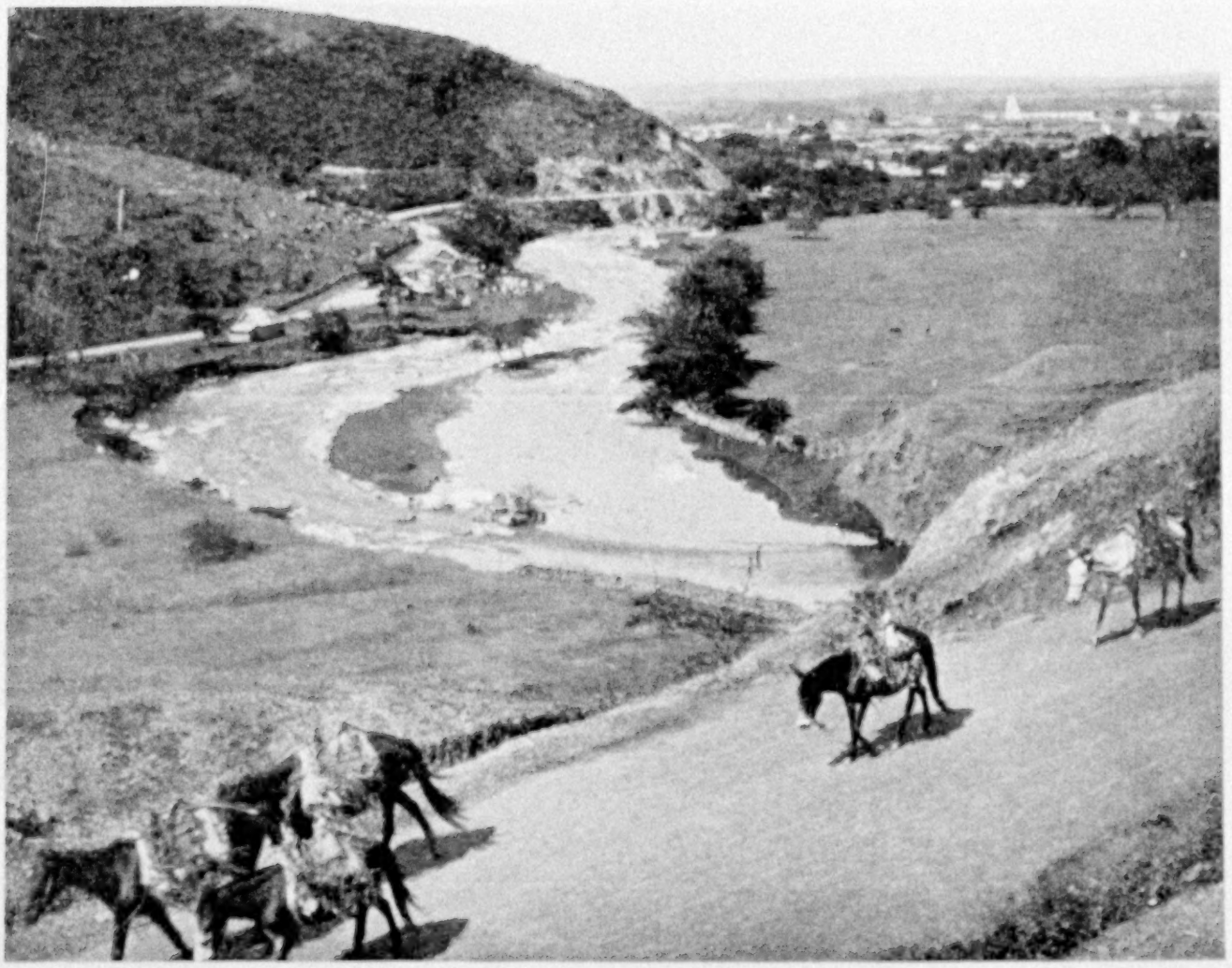
If, therefore, our west-coast steamer does not leave immediately after our arrival at the Isthmus, let us be thankful for an opportunity to see more of the Canal Zone than we could observe from the steamer during our transcontinental voyage across the Isthmus.

The very pier on which we land gives us an object-lesson in the fascinating history of the exchange of raw materials for finished products. Northbound copper from Peru and Chile; cacao and ivory nuts from Ecuador; hides from Colombia, here meet and pass automobiles and sewing-machines, shoes, and dress goods on their way south.

Incidentally, we may learn that already we are south of the latitude of Caracas; that Colon, on the Caribbean, is farther west than Panama, on the Pacific; that at the last-named city the sun rises as well as sets over the Pacific, and other local geographical facts to which stay-at-homes are strangers.

Once through the canal and past the guns at Forts Amador and Flamenco, we enter the Bay of Panama, to my mind the most beautiful harbor, next to that of Rio, in tropical America, and are fairly embarked upon our journey. Thus far we have been sailing, as it were, under sealed orders, and as we steam slowly and smoothly down the coast to Buenaventura we may open our papers and examine our proposed itinerary.

The chief objective of any tour in Colombia is naturally Bogotá, its capital and



Photograph by Frank M. Chapman

THE APPROACH TO CALI

As one descends the eastern slopes of the Western Andes into the Cauca Valley, a turn in the trail, just after crossing the foaming Cali River, reveals the city of Cali in the distance.

largest city. We will therefore go to Bogotá, but over a far more interesting route than the one up the Magdalena River from Barranquilla, near its mouth, usually followed by travelers to that city. We shall be somewhat longer on the way; but time, I repeat, is not of the essence of our journey.

To visit Colombia and not see the Cauca Valley would, in my opinion, be an even greater omission than to fail to visit Bogotá. From Buenaventura, consequently, we will cross the western Andes to Cali, metropolis of the fertile, healthful, and beautiful Cauca Valley; sail down the Cauca River to Cartago, whence we cross the Central Andes over the Quindio Pass to Girardot, on the Magdalena River. Here we may take the train for Bogotá, returning, if we like, the same way, or, better, by mule to Honda, farther down the river.

From La Dorada, a few miles below Honda, we begin our voyage down the Magdalena to Barranquilla, where we are within 18 miles of Puerto Colombia, whence we may take passage for New York. It will be observed that this route crosses two ranges of the Andes; takes us from sea-level in the Tropical Zone to 11,000 feet in the Temperate Zone; requires no doubling on our tracks, and makes all of our river routes downstream, a matter of no small importance. (See the Map of South America, issued as a supplement with this number of THE GEOGRAPHIC.)

A FIFTY-DAYS' JOURNEY FROM NEW YORK

The actual traveling time from New York and return required for this journey is about fifty days, of which not less than thirty may be passed in Colombia, where our methods of transportation will afford both time and opportunity to observe the country, its products and people, en route.

Buenaventura, about half-way down

Photograph by Frank M. Chapman

A CALI PATIO

The *patio* of a Latin-American house of the Spanish type is the focal point of home life. Almost invariably it is shared by a number of pet birds, in and out of cages. The little white egrets in this picture were semi-domesticated and with them were several equally tame tree ducks.

Colombia's Pacific coast, is distant some 360 miles, or about two days' journey, from Panama. Possibly no port in South America will be proportionately more benefited by the opening of the Panama Canal than Buenaventura. Possessing an excellent harbor and railway connection with the highly productive region east of it, Buenaventura has a promising future; but its present cannot be spoken of with enthusiasm.

Situated on a small island, surrounded by a network of mangrove-bordered lagoons, under skies from which rain falls almost continuously, Buenaventura is not a Garden of Eden. Its population of some 3,000 is composed chiefly of negroes who can endure the climatic conditions. The only resident whites are the cable operator and agents of shipping firms, whose presence is demanded by the needs of their occupation.

Our first expedition reached Buenaventura aboard the venerable steamer *Quito* at 4 o'clock of a March afternoon. As usual, it was raining. Customs, we learned, closed at 5, the next train left at 7 o'clock the following morning, and there would not be another for three days. Even from the steamer, Buenaventura looked as though it deserved everything evil that has been said of it, and closer inspection confirmed first impressions.

The possibility of having to spend three days in, to put it mildly, so unattractive a place brought the first conflict between "push" and "*mañana.*"

Reaching shore in a canoe through the courtesy of the port physician and the further able assistance of a broad African back and stout legs, I found Richardson, our Museum representative, awaiting me, and jointly we paid our respects to the Administrador de Aduana — in other words, the customs officer. To him I presented a letter of introduction from the Colombian Minister at Washington, describing our plans so eloquently that,

Photograph by Frank M. Chapman

THE CAUCA VALLEY, SHOWING THE "FARALLONES," OR SUMMITS OF THE WESTERN ANDES NEAR CALI, FROM THE HACIENDA LA MANUELITA

after due consideration, the administrador assured us no custom examination was necessary.

The train of negroes that by this time had begun to arrive with the first of our thirty-odd trunks, bags, and boxes, was therefore diverted to the warehouse of our local agent, where our equipment was deposited for the night.

FORTY YEARS TO BUILD A 60-MILE RAILROAD

Early the following morning its transfer by man-power to the railway station was well under way when a dignified gentleman informed us that the captain of the port had reversed the decision of the administrador and that we must submit to custom-house inspection. As the captain, however, was still sleeping, we assured his representative that we could recognize only the authority of the administrador. We proceeded, therefore, with the shipment of our effects, and, thanks to this successful combination of Yankee push and Colombian courtesy and "*mañana*-ism," we made our exit from Buenaventura.

Owing mainly to a shortage of funds and an excess of floods, the railway from Buenaventura to Cali, distant in an air line only 60 miles, was under construction for forty years. It follows the Dagua River, for a short distance a broad, smoothly flowing stream, then a dashing torrent fed by dozens of foaming brooks which plunge down the mountain slopes to meet it.

Only the passage of trains prevents the forest from reclaiming the right of way. Vegetation flourishes with a luxuriance proportioned to the excessive rainfall, which is mainly responsible for it. With ear-piercing squeals and shrieks, the train winds its way through leafy tunnels. There are palms of many species, cecropias and bamboos, with ferns, arums and red-beaked heliconias, and a profusion of parasitic plants in endless variety.

Photograph by Frank M. Chapman

FERRYING ACROSS THE CAUCA RIVER IN THE SHADOW OF CEIBA TREES

Dust is here unknown, and I was impressed by the cleanness of the foliage, every leaf of which received a daily shower. Nor did a knowledge of the fact that these rain-soaked, almost impenetrable, forests are inhabited by many species of birds found in no other part of the world detract from the interest with which Louis Agassiz Fuertes, the artist of the expedition, and I observed them.

In March, 1911, when I visited this part of Colombia, the railroad which now reaches Cali was not completed beyond Caldas, 2,500 feet above, and about five hours from Buenaventura.

Caldas lies in a basin-shaped valley, the western rim of which, throwing what is technically known as a "rain-shadow," robs the immediately surrounding country of the precipitation which so strongly characterizes the Pacific slope of the Western Andes in Colombia. As a result the forests through which we had just passed, and which crown the mountains above us, are here replaced by grass-covered hills with scattered cacti and acacias, representing the flora of an arid region.

This was the first of many instances where personal observation was found to be absolutely essential to a proper interpretation of faunal problems. It would be out of place to enlarge upon this theme here, but I cannot leave it without emphasizing the importance of field-work in zoögeography, and the futility of attempting to determine the boundaries of faunal areas and the laws governing the distribution of life merely on the basis of a laboratory study of specimens.

BIRDS RESTRICTED TO CLEARLY DEFINED ZONES

The irresistible combination of a religious fiesta and a wholly secular circus so delayed the assembling, packing, and saddling of our impressive array of mules that we left Caldas the following morning at too late an hour to reach Cali the same day. The night therefore was passed at Rancho El Tigre. We were now, however, in no haste. The back of a mule affords excellent opportunities for reconnaissance. The pack animals set the pace of three miles an hour and rarely did we care to increase it. Barometer in hand we observed the changes in altitude and noted their effects on the distribution of life.

As we became familiar with the birds and learned to recognize them at sight and by voice, we could predict with surprising accuracy when certain species would appear and when they would in turn be replaced by others. In spite of their mo-

Photograph by Frank M. Chapman

THE MARKET-PLACE AT CARTAGO

The town of Cartago was founded in 1540, at a site distant 15 miles from the present one. Here begins the ride over the Quindio Trail to the Magdalena Valley.

bility we discovered that most birds are as closely restricted to their respective zones as if they were confined to them by actual barriers. Under favorable conditions I have seen these zones, or life strata, so sharply defined that a five minutes' walk has completely changed the character of the bird-life by which I was surrounded.

The first 3,000 feet of our ascent from Caldas was made over bare, sunburned hills, but at an elevation of 5,000 feet above sea-level we got beyond the "shadow" of the outlying westerly ridge and entered the lower border of the Cloud Zone.

At once the grassy slopes gave way to even more luxuriant forests than those of the lowlands. New birds appeared. We had left the Tropical Zone behind us and entered the Cloud or Subtropical Zone which, we subsequently discovered, extends up the mountain sides to an elevation of from 9,000 to 9,500 feet.

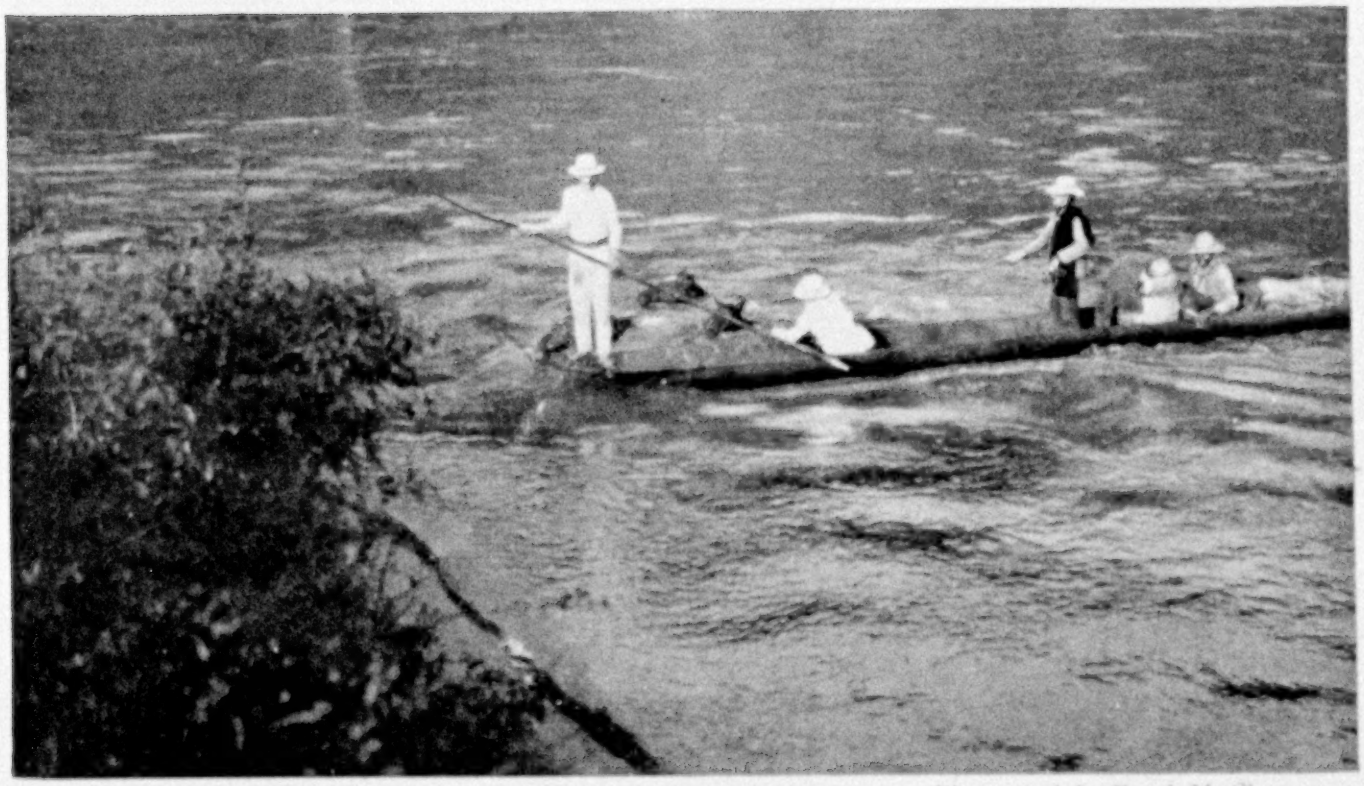
A TRAVELER ALWAYS CARRIES HIS OWN SLEEPING OUTFIT

Our first experience as uninvited, unannounced guests in a Colombian home was typical of many subsequent ones. Rancho El Tigre is a modest establishment, but whatever it possessed in the way of food and sleeping quarters was with overflowing cordiality placed at our disposal.

A traveler in Colombia always carries his own sleeping outfit. All he requires, therefore, is a corner in which to place it. My pneumatic mattress greatly excited the curiosity of our hosts at El Tigre, and a judicious description of its value as a tester of one's lung-power so stimulated ambition to exhibit blowing ability that I had no difficulty in getting it inflated. A similar plan was used to advantage at high altitudes where lung-power is at a premium.

At El Tigre we tasted and enjoyed our first chicha, the national drink made of fermented corn. But chicha we later learned, like pulque of Mexico, varies greatly in character. A home-made brew with a history which will bear publicity is usually palatable and refreshing, but chicha of the stalls and shops is an able advocate of prohibition among the discriminating.

Free from the distracting influences of fiestas and circuses, we made an early start after a restful night at El Tigre, and at 10 the next morning reached the summit of the San Antonio pass, whence we had our first and long-anticipated view



Photograph by Frank M. Chapman

CROSSING THE RIO VIEJA

After leaving Cartago, and just before reaching Piedra Moller, travelers and their baggage are ferried across the Rio Vieja in a dug-out. The pack and riding animals swim. The charge for this service, pasture for the three animals, a night's lodging, dinner, and coffee in the morning, for three men, was $1.30!

of the Cauca Valley. It was raining when we mounted the divide and, to our intense disappointment, the half-flooded trail down the eastern slope of the range soon disappeared in the clouds—fog we should have called it at a lower altitude.

There is a primitive posada (inn) here where Richardson had but recently made his headquarters while collecting birds in the adjoining forests, and attractive Señora Apollonia in charge accorded her "Meester" friends a shy but cordial greeting and an emergency breakfast of sardines and plantains.

MULE-DRIVERS COMPRISE HALF THE MALE POPULATION

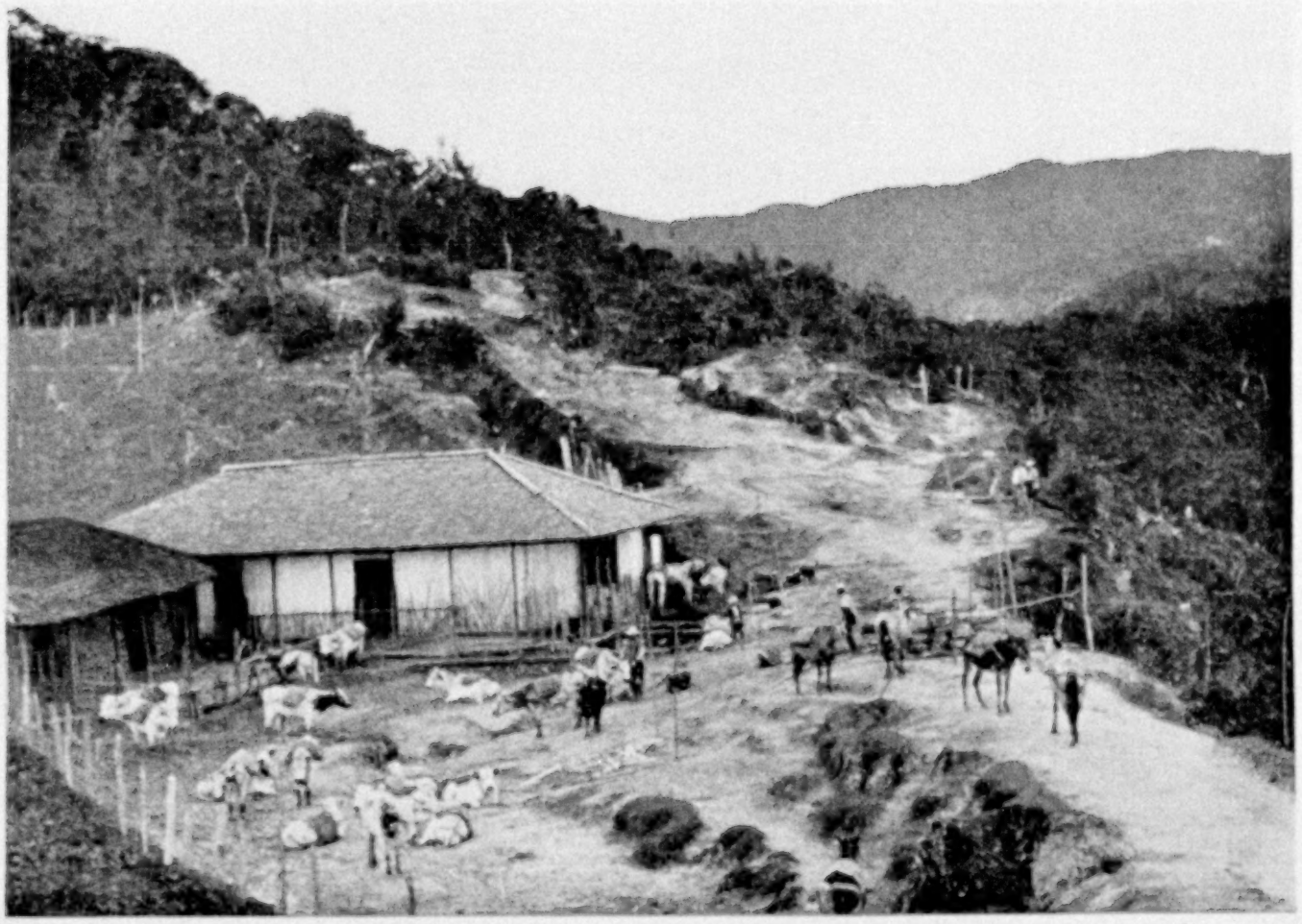
The small level place in front of the posada, whence the ground dropped abruptly both to the east and west, was constantly occupied by steaming pack mules with dripping arrieros (muleteers) adjusting packs to meet the requirements of a down instead of up grade. Over half of the male population of Colombia are said to be mule-drivers. This life is one of exposure and hardships calling for great endurance and ability to meet the disasters which sooner or later befall one on the trail, and it develops a set of picturesque vagabonds who play a leading part in any highway scene in Colombian life.

The Colombian mule is not large; he is rarely overfed, but is expected to carry a weight of 300 pounds without regard to grade or the condition of the trail. Frequently only the combined exertions of mule and arriero keep him on the road. The whip is not spared, but the arriero appears to depend chiefly on his vocabulary as a stimulant. With incredible eloquence he encourages, pleads, curses, and rages as circumstances require, and his voice is the most characteristic sound on Colombian roads and trails.

Not one of the arrieros who had reached the heights of San Antonio failed to sample a *copita* of Apollonia's *resicado*, a fiery white rum, the boy of twelve tossing his drink off with the matter-of-fact gravity of his seniors.

HOSTESS' FOUR-YEAR-OLD DAUGHTER SMOKES A BIG CIGAR

So far as we observed, Apollonia's four-year-old daughter had not acquired a taste for rum, but she had already laid the foundation of a habit which Colombian women, at least of the rank and file, have



Photograph by Frank M. Chapman

A POSADA IN THE TEMPERATE ZONE, ON THE QUINDIO TRAIL OF THE CENTRAL ANDES, AT AN ALTITUDE OF 10,300 FEET

A train of oxen, much used as pack animals in the Central Andes, is resting in the corral. Note the stunted trees of the Temperate Zone forests. The birds here were unlike those found at lower altitudes in the Tropical and Subtropical Zones.

acquired in advance of their northern sisters. Sitting cross-legged on a bench chattering baby-talk, she contentedly smoked a large black cigar, around or partly around which her tiny forefinger coiled in stereotyped form. Her mother gave her a light and seemed unfeignedly proud of her offspring's accomplishment.

The rays of the mountain sun gradually lifted the curtain of clouds from the scene below us, revealing beneath it the level floor of the Cauca Valley, with gleaming lagoons and streams and varicolored areas of marsh, pasture, and forest. Clouds still hung over the sunlit valley and above them rose the purple summits of the Central Andes, distant 40 miles or more. It was a scene of great beauty, made even more memorable when, on a subsequent occasion, we saw far to the south the three superb snow peaks of Mt. Huila.

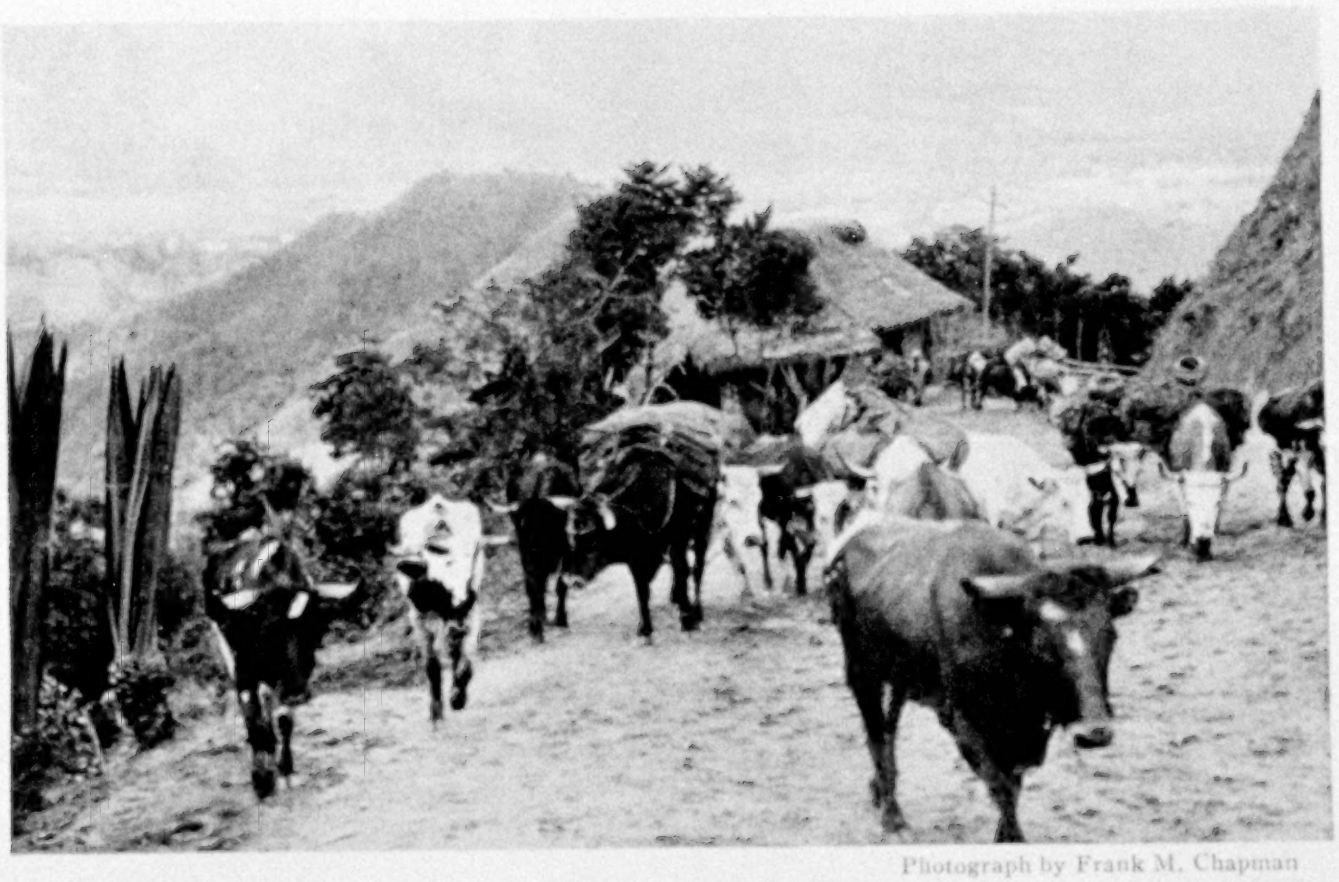
The moisture-bearing winds from the Pacific are condensed on only the western slope of the coast range. As a result the Cloud or Subtropical Zone forest ends on the summit of the range, the eastern slopes being grass-covered and devoid of trees.

The change in vegetation is as abrupt as the change in grade and serves further to illustrate the striking local effects of climatic and physiographic influences.

The homes of that remarkable assemblage of tanagers, motmots, toucans, trogons, and many other brilliantly colored birds which characterize and, in large part, are restricted to the Subtropical Zone, ended at the summit, and on the arid eastern slope few birds were found.

ARRIVAL AT CHARMING CALI

It was mid-afternoon when a turn in the trail showed us the attractive little city of Cali. Four stately ceibas form more fitting and impressive city gates than the hand of man could erect, and as we crossed the picturesque bridge over



Photograph by Frank M. Chapman

THE ASCENT OF THE CENTRAL ANDES ON THE QUINDIO TRAIL FROM IBAGÜE

Oxen are commonly used as pack animals on the Quindio Trail. They carry less than mules and travel only about half as far in a day, but in the wet season they are less apt to get mired.

the Cali River, which they guard, we experienced a definite sensation of arrival.

Cali, a city of some 45,000 inhabitants, is the metropolis of the Cauca Valley. Here the traveler will find excellent quarters and an agreeable, healthful climate, and if he wishes to study the life of a Latin-American city free from the cosmopolitanism of a seaport, Cali's streets and market-place, plaza and river-front will supply him with abundant material.

Possibly he may be asked to visit a sugar estate or cattle ranch in the valley where, if he be young and romantic, he may be so charmed by the semi-baronial life of a planter or ranchman that he will be tempted to become a Caucano.

There are few places in the Americas which offer greater inducements to one who wishes to become a resident of the tropics. With an altitude of 3,500 feet above sea-level, and a moderate, evenly distributed rainfall, the valley possesses a white man's climate.

The soil is inexhaustibly fertile. There are sugar plantations on which cane has been known to grow continuously for 120 years without fertilization. Cattle thrive, and once a stand of para grass is established, it will feed one and a half head of cattle per acre without further care. The railroad now gives access to the coast, the Panama Canal, to the world, and the future prosperity of this favored spot seems assured.

The mountains which rise through brown, softly molded foothills to wooded summits not only supply a cloud-hung panorama on which shower and sunshine and shadow play with constantly changing effects, but they place another climate almost within arm's length.

To be more specific, two or three hours in the saddle take one from the floor of the valley, in the Tropical Zone, to an elevation of 6,500 to 7,000 feet in the Subtropical Zone. At these altitudes the more well-to-do residents of the valley build attractive bungalows to which they repair for week-end visits or when they wish relief from the continuous, though not excessive, heat of their homes.

Two of these bungalows, one in the Western, the other in the Central Andes, were placed at our disposal by their owners and for several weeks they be-

XUM

PERSUADING A DIFFIDENT TRAVELER ON AN ANDEAN ROAD

Louis Fuertes leads his horse through the ditches (*canjilones*) and over the ridges (*almohadillales*) of an Andean trail. Roads of this character are produced by trains of pack animals, each one of which steps in the track of its predecessor (see text, page 370).

Photographs by Frank M. Chapman

THESE COLOMBIAN HIGHWAYS WILL NEVER BE POPULAR WITH AUTOMOBILISTS

A MOTHER AND HER CHILDREN CROSSING THE ANDES IN CHAIRS

The chairs are lightly but strongly made, with a hoop, like the "bow" of a "prairie schooner's" top, above the seat, over which a sheet is thrown to protect the occupant. Four bearers, or *silleros*, were required for the three chairs. For eight days they traveled at about the same rate of speed as pack-mules, or approximately three miles an hour.

Photographs by Frank M. Chapman

AT THE JOURNEY'S END (SEE ALSO ILLUSTRATION ABOVE)

XUM

Photograph by Frank M. Chapman

SAWING BOARDS BY HAND IN THE SUBTROPICAL ZONE OF THE CENTRAL ANDES

Two men—one above, the other below—work with mechanical precision. A dozen boards ten feet long, a foot wide, and not more than half an inch thick will be produced from the log pictured. They were designed for use in making boxes to hold one-pound bricks of sugar.

came our headquarters while we explored the surrounding forests.

Never were naturalists more comfortably situated. The temperature ranged from 60° to 70° daily; there were no flies, mosquitoes, or other troublesome insects; the grandeur and diversity of the scenery held us in a condition of exclamatory enthusiasm; and every day brought valuable additions to our collections.

Whether naturalist or painter, these quickly accessible subtropical mountain resorts form a distinctive and highly important feature of life in this favored region.

One is tempted to linger here indefinitely, but we are already far behind our schedule. These time-table itineraries are the bane of travel. They may be made with some reason for Cook's tours, but they are assuredly out of place in a country where the means of transportation are irregular, where time is rated far below par, and where the traveler will be tempted at every turn to depart from a prearranged plan.

The next stage in our journey, for example, may be made by steamer or by mule, but if one has a choice by all means take the former. I never recall my three days' voyage from Cali to Cartago without a desire to repeat it. The distance in an airline is about 100 miles, but by the river it is nearly twice as far and I wouldn't have shortened it an inch.

A TRIP DOWN THE CAUCA RIVER

The Cauca is a small, intimate river. From the steamer the details of both banks may be easily seen. The height of the water and rapidity of the current depend upon the amount of rain which has recently fallen in the area the river drains. At the time of our voyage in May the river was bank full and running about five miles an hour. To bring our flat-bottomed stern-wheeler to her not infrequent landings it was necessary to pass them, turn, and steam slowly up stream.

If the Cauca's serpentine course increased the length of our journey it also added greatly to its charm. Rapidly we

wound through savannas with grazing herds and marshes with birds of many kinds, past cacao groves, with their sheltering *bois immortelles*, luxuriant growths of plantain, plumed cane, towering bamboos, and stretches of primeval forest.

The Central Andes, with their ever-changing clouds, rose grandly from across the valley, but the bare slopes of the western range were so near that in places the river laved their feet.

TROPICAL BIRDS MAY BE OBSERVED FROM STEAMER

The birds of a tropical forest are not easily observed, but from the steamer we had most satisfactory views of a large numbers of marsh- and savanna-inhabiting species. There were wood, white, and "cocleet" ibises, lapwings, jacanas and kingfishers, ducks of several kinds, including wild muscovies, and the rare Nation's duck, known from only two specimens until we rediscovered it near Cali.

Cormorants were nesting by hundreds in the upper limbs of the bamboos—a surprising situation—and giant black and yellow cassique orioles occupied their four-foot long nests swinging from branches high above the river. There were little gray herons and night herons, while hundreds of large white egrets dotted the savannas or, seen in distant flight, gleamed against the mountain-side like wandering snowflakes.

Pigeons and doves of several species, and green paroquets frequently passed overhead en route to roost or feeding ground, and a flock of roseate spoonbills so crowded the limbs of a leafless tree that it seemed to be a mass of pink blossoms.

Occasionally we passed, all too rapidly, a family of red howling monkeys asleep in the tree-tops or a capybara staring at us calmly from the shore.

If all the passengers on a Cauca River steamer are as attentive and cordial to strangers as those with whom we chanced to travel, we assert that the social features of life aboard ship form no small part of the attractions of a voyage on this beautiful river. Every one among the score of passengers seemed to know every one else, and within an hour after sailing Fuertes and I were included in a merry house-boat party.

With regret we bade *adios* to one after the other of our newly made friends as, donning *zamarras* or chaps, spurs and *ruana* or poncho, they mounted the horses waiting to take them to their estates. One family, however, a gentleman, his wife, and boy and girl of about six and eight years, accompanied us over the Central Andes. The children were carried all the way to the Magdalena River in chairs on men's backs. Their mother abandoned her chair only on the last day of the journey. Four bearers, or *silleros*, were required for the three chairs, and they traveled at about the speed of pack-mules, or approximately three miles an hour (see illustrations, page 367).

FOLLOWING THE QUINDIO TRAIL

Mules for the journey from Cartago to Girardot should be engaged before leaving Cali, when, if one arrives early in the morning, a start may be made the same day. Our stopping-places in crossing the Quindio depend upon the time we leave Cartago and the rate at which we travel. At the best they are rather primitive, and to one's sleeping outfit it is well to add a small supply of provisions.

It was 3 o'clock in the afternoon before we finally got under way, and we went only to Piedro Moller before putting up for the night. On successive nights thereafter we stopped at Filandia, Salento, Volcancito, El Pie de San Juan, El Eden, Ibagüe, and Chicoral, to the disgust of our arriero, taking eight days for a journey which can be made in four.

The Cauca Valley at Cartago is much wider than at Cali. For the first two days the way was up and down over low scrub-grown hills, and it was not until we reached the village of Filandia that we had our first view of the Central Andes. A fierce thunder-storm surrounded us by walls of rain and turned the plaza of the little town into a lake. At evening the clouds broke and the light of the setting sun warmed the distant forests, set the snows of Santa Isabel on fire, and crept up over the brown Páramo to rest at nightfall in a rosy glow on the dome of Tolima.

The real ascent of the range began at Salento, the last town we encountered until we reached Ibagüe at the eastern

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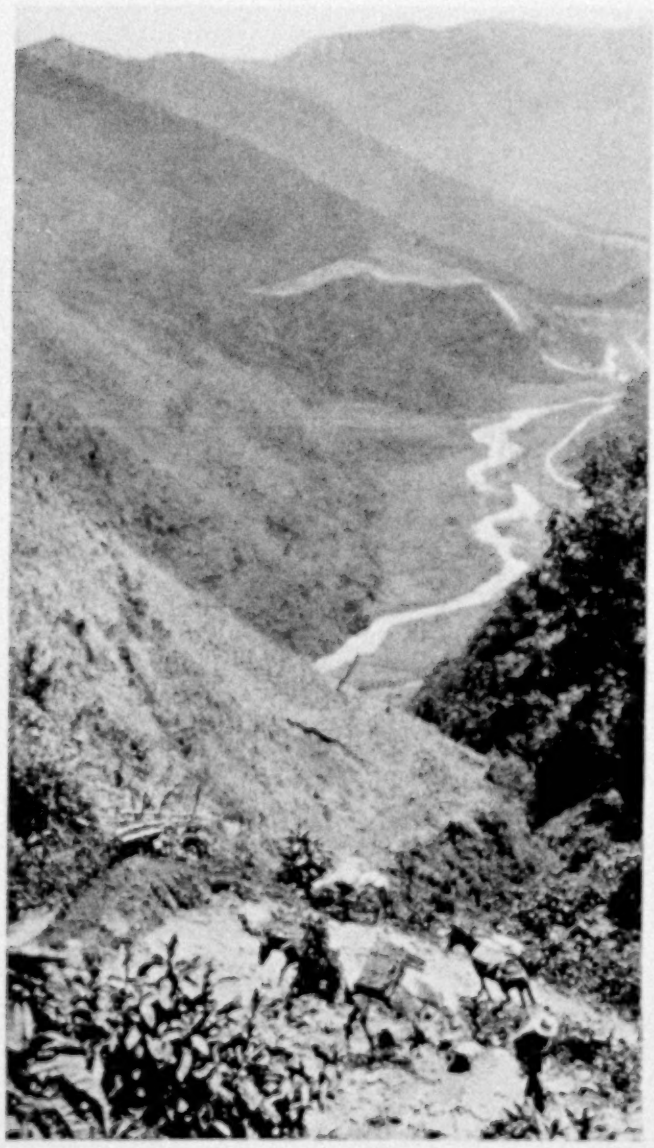

Photograph by Frank M. Chapman

THE HEART OF THE CENTRAL ANDES: RIO TOCHÉ, FROM THE PASS OF SAN JUAN

The inn known as "El Pie de San Juan" (the foot of San Juan) lies near the Toché River where the trail of San Juan leaves the valley on the steep ascent up which the mules are struggling.

base of the range. We now had some conception of what Andean travel means and, in consequence of recent rains, had our first real experience with that peculiar type of road developed by pack animals. As a result of each beast's stepping in the tracks of its predecessor, wet places become a succession of ditches of varying depth and degrees of muddiness, separated by ridges. A man can cross such pieces of trail by stepping from ridge to ridge, and here the silleros were at an advantage. But horses, mules, or oxen must step in each ditch and drag their legs over the intervening ridge to the next ditch. It is slow and painful work for all concerned (see illustrations, page 366).

An hour above Salento we looked down upon the picturesque Quindio Valley, with its winding river and groves of palms, and up to the snows of Santa Isabel, a scene which strongly suggests Church's "Heart of the Andes."

The air soon became perceptibly cooler, there was a marked change in the character of the vegetation, birds of species we had never seen before became common, and at an elevation of about 9,500 feet we for the first time passed from the Subtropical to the Temperate Zone. We seemed suddenly to have entered a new world and were quite unprepared for the novelty of the experience.

The stunted, close-limbed, small-leaved forests of this zone extend to an elevation of about 12,000 feet, beyond which, and up to the lower level of snow, lies the bleak, open Páramo, constituting the fourth zone of Andean life and having, like those below it, a fauna of its own. It is evident, then, that these snow-capped mountains of the tropics have all the faunal elements one would encounter in traveling from the Equator to the poles.

To summarize: the Tropical Zone extends from sea-level to about 5,000 feet, the Subtropical from 5,000 to 9,000 feet, the Temperate from 9,000 to 12,000 feet, and the Páramo, or Alpine, from 12,000 to 15,000 feet, or snow-line.

Each zone has species of plants and animals which are restricted to it. For example, in that clearly defined stratum of life lying on Colombian mountainsides, between 5,000 and 9,000 feet, we found 230 species of birds which were not observed elsewhere. To determine the origin of these highly specialized faunas is the main object of our Andean researches.

The Pass of the Quindio, lying not far above the point at which we entered the Temperate Zone, has an elevation of 11,200 feet, and the trail, therefore, does not take us as high as the Páramo. We passed the night at Volcancito skinning birds collected on the way. It was too cold to sleep. Here, if not before, the traveler will discover why he has been carrying two pairs of double blankets.

The trail, following a route which existed long before Benalcázar crossed these mountains to make his surprising junction with Quesada and Federmann

on the Savanna of Bogotá, descends into valleys and climbs the intervening spurs.

At times we crossed rippling streams half hidden by luxuriant vegetation; at others we had far-reaching views of superb mountain scenery, culminating in the surpassing picture of the Toché Valley from a forest of wax palms. It was on this trail, in 1801, that Humboldt discovered this stately tree which, with a height of from 180 to 200 feet, towers above any member of its family known to me.

THE HEART OF THE ANDES

The Toché Valley is in truth the Heart of the Andes and, whatever one's itinerary, it should include a night at the little inn known as El Pie de San Juan.

From this point one may reach Ibagüe in a day. I am told that the railroad from Girardot now connects this ancient city at the foot of the Central Andes with the Magdalena. If it does, our mule ride is over, for there is nothing on the hot plains of Tolima to warrant a longer stay in the saddle.

Girardot, with an elevation of 1,056 feet, is at the head of the larger steamship navigation on the Magdalena and the point of departure for the train for Bogotá. Possibly for the first time in Colombia we shall here be uncomfortably warm and will welcome an opportunity to reach higher altitudes.

Although only 82 miles long, the railroad makes an ascent of nearly 8,000 feet in reaching the tableland, and the better part of the day is required for the journey. At Facatativá we change cars for the run of 25 miles over the level savanna to Colombia's capital.

BOGOTÁ A CITY OF STRONG CONTRASTS

What the Cauca Valley is to tropical Colombia, the Savanna of Bogotá is to that part of the country lying in the Temperate Zone. The elevation is about 8,700 feet, the mean temperature is about 60°; there is a fair rainfall, the ground is productive and, where not devoted to grazing, the whole savanna is given over to the cultivation of corn, cereals, and potatoes. Streams and ponds, and, in the rainy season, lakes, furnish a home for water-fowl some of which are resident all the year, while others come from North America for the winter.

Photograph by Frank M. Chapman

A PREHISTORIC STONE IMAGE FROM SAN AGUSTIN, IN THE PARK OF BOGOTÁ

San Agustin, at the head of the Magdalena Valley, was the site of a culture, neither Incan nor Chibchan, about which comparatively little is known. Heroic figures of this kind have been found in numbers there. Two of them were transplanted to Bogotá under the direction of former President Reyes.

A naturalist has neither time nor inclination for a study of city life. Certainly I do not feel qualified to write of the characteristics of Bogotá, and with a suggestion or two I will leave the traveler to make his own investigations.

Bogotá is our first city in the Temperate Zone, and we will note the almost entire absence of the negroid element which forms a large part of the population of lower altitudes. In its place we shall find the sturdy, ruddy-complexioned descendants of the Chibcha type, indigenous to this region.

Bogotá is a city of strong contrasts—a fact which will impress us if we go from the market-place, swarming with natives,

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Photograph by Frank M. Chapman

FOLIAGE THAT WELL DESERVES ITS NAME

A luxuriant growth of "elephants' ears" in the Subtropical Zone of the Western Andes at an altitude of 6,500 feet.

to the streets of the financial section of the town, no less thickly peopled with white men in frock coats and high hats, who, in default of a warmer place, meet here to discuss the affairs of the day.

Bogotá is a well-ordered, superficially at least, clean city with a large and efficient police force, with an opera-house, metropolitan in appearance, with polo, foot-ball, and tennis clubs, museums, a national library of 60,000 volumes, a charming social and a highly developed intellectual life.

THE OLD MULE TRAIL FROM BOGOTÁ TO HONDA

The traveler may spend much time profitably and pleasantly at Bogotá, and when he tires of the city he may make excursions to the haciendas on the savanna, to the Falls of Tequendama, or the *cafetales* (coffee plantations) of Fusagasugá. These journeys may be made in part by train, in part by horseback. Cars for horses are attached to all passenger trains, and when buying a ticket for himself the traveler buys one for his horse, the charge being alike for both.

Prior to the completion of the railroad to Girardot, in 1909 Bogotá was connected with navigation on the Magdalena by the mule trail to Honda, a fact which should always be remembered as one considers the city's growth in relation to its remoteness. This route is still used for freight, the mule proving an effective if humble competitor of the locomotive, and I strongly urge the traveler to follow it when returning to the Magdalena. The country traversed is far more interesting than that through which the railway passes, and history and tradition hang thick about the trail and the posadas.

Above all, from the heights between Guaduas and El Consuelo, known as "El Alto de Sargento," there is a view across the Magdalena Valley of the Central Andes with the snowfields of Ruiz and Santa Isabel and cone of Tolima, which is worth coming to Colombia to see. In composition, modeling, color, and grandeur it cannot, in my experience, be matched by any mountain panorama in the Western Hemisphere.

Some day I hope to return to the little inn of El Consuelo to watch, morning after morning, the sublime spectacle of the sun illuminating the snow crests of the Central Andes, revealing the deep seams on their rugged slopes, and stealing slowly out in the valley at their base until it turns the winding Magdalena into burnished silver. Certainly the traveler should plan to spend at least one night at El Consuelo, and when the daily miracle of sunrise is over, he may continue his journey to Honda.

A VOYAGE DOWN THE MAGDALENA

Honda is a hot town and will seem doubly so after the cool, invigorating air of the tableland. It is a relief to board the train for the 18-mile run to La Dorada, where we embark on the steamer for Barranquilla. Once under way, current and stream combined give us a speed of 10 to 12 miles an hour and a grateful breeze sweeps through the boat.

The voyage down the Magdalena was an enlarged edition of our cruise on the Cauca. The river is broader, varying from a quarter of a mile to half a mile in width; the steamer was more spacious.

The fauna of the shores and playas was more varied, the passengers more numer-

Photograph by Frank M. Chapman

THE WATER APPROACH TO THE MARKET IN BARRANQUILLA

A canal from the Rio Magdalena gives access to the large, well-stocked market of Barranquilla. Most of the provisions, fruits, vegetables, fish, etc., are brought in native canoes, a means of transportation which adds greatly to the picturesqueness of the water-front and suggests the approach to the market-place of Tampico, Mexico.

ous and representing widely different callings. There was an archbishop and a bull-fighter who shared the same bottle; a music-loving priest and a guitar-playing rake who found community of interest in song; a Colombian general, an English engineer, and an American promoter, all strongly marked types, with enough minor characters to stage the play.

FAUNA OF THE MAGDALENA'S SHORES

A variety of circumstances have made the Amazon best known of tropical American rivers, but from the traveler's standpoint a voyage on the Magdalena is infinitely more interesting. From an Amazon steamer the river's banks may be but a thin line on the horizon, if, indeed, they are visible at all, but on the Magdalena one or both shores are within range of the unaided eye, and with glasses one can often see intimate details of forest life.

There are monkeys, sloths, macaws, parrots, pigeons, toucans, and many other wood-loving creatures; herons, screamers, jacanas, and jabiru storks in the marshes, capybaras on the shores, and rafts of crocodiles on the playas.

The four days' voyage to Barranquilla passed so quickly and pleasantly that when next I returned to the city I took passage on a boat which required twelve days for the trip to Honda. Arrived at Barranquilla, we are again within touch of ocean-going steamers and our Colombian tour is ended.

In conclusion, let me say that no one can be more conscious than I of my failure to draw an adequate picture of Colombia's attractions, but at least I may claim the merit of under, rather than over, stating them.

THE SOCIETY'S NEW MAP OF SOUTH AMERICA

THE map of South America that accompanies this issue of the NATIONAL GEOGRAPHIC MAGAZINE portrays a continent which has many characteristics peculiar to itself.

It is the most southerly of all the continents. Where Africa reaches to approximately 36° south latitude and Australia to 38°, South America stretches into the austral seas until Cape Horn touches 56° south latitude. In other words, South America extends some 1,200 miles nearer to the South Pole than any other continent.

This continent has twice the area of Europe, yet it has less than two-thirds the combined population of France and Italy. Twice as large as the United States, including Alaska, it has a population only a little more than half as great. In general outline it is not unlike Africa, but it is more symmetrical than the Dark Continent.

The three continents of the Southern Hemisphere are similar in their unindented coast-lines, and the headlands of Brazil seem to reach out as if to join hands across the sea with the corresponding headlands of Guinea.

The vast basins of the Amazon, the Rio de la Plata, and the Orinoco are in many parts so low-lying as to be swampy, and in spite of the tremendous amount of water they carry off, the currents are sluggish; yet so towering and so extensive are the Andes Mountains that if all the highlands were plowed down and all the lowlands were filled up, the continent would be a plateau 1,312 feet above sea-level, and 820 feet of this would be represented by the material that constitutes the Andes.

RIVERS OF NORTH AND SOUTH MINGLE AT THEIR SOURCES

South America is distinguished among all the continents for the absence of clearly defined watersheds between its great river basins. From the Orinoco delta to the Rio de la Plata estuary there is almost a continuous overlapping of these basins. In southern Venezuela, where that country thrusts a political peninsula into northern Brazil, below the town of Esmeralda, the waters of the upper Orinoco suddenly decide to part company, some of them reaching the Amazon and the sea through the Brazos Casiquiare and the others forcing their way to the lower Orinoco over the rapids of the eroded mountain barriers at Maipures and Atures.

Although the communications between the Amazon and the Rio de la Plata basins are not so marked as those between the Amazon and the Orinoco basins, there are numerous places where the flip of a bird's wing, the direction of the wind, the abundance of local rains, the formation of a sand-bar, or the slip of a bit of land may determine the destiny of a drop of water, whether it shall flow past Pará or Buenos Aires. At the foot of the Bolivian highlands of Santa Cruz Province various branches of the Amazon-feeding Mamoré and the Rio de la Plata-feeding Pilcomayo seem rivals in their bid for territory to drain.

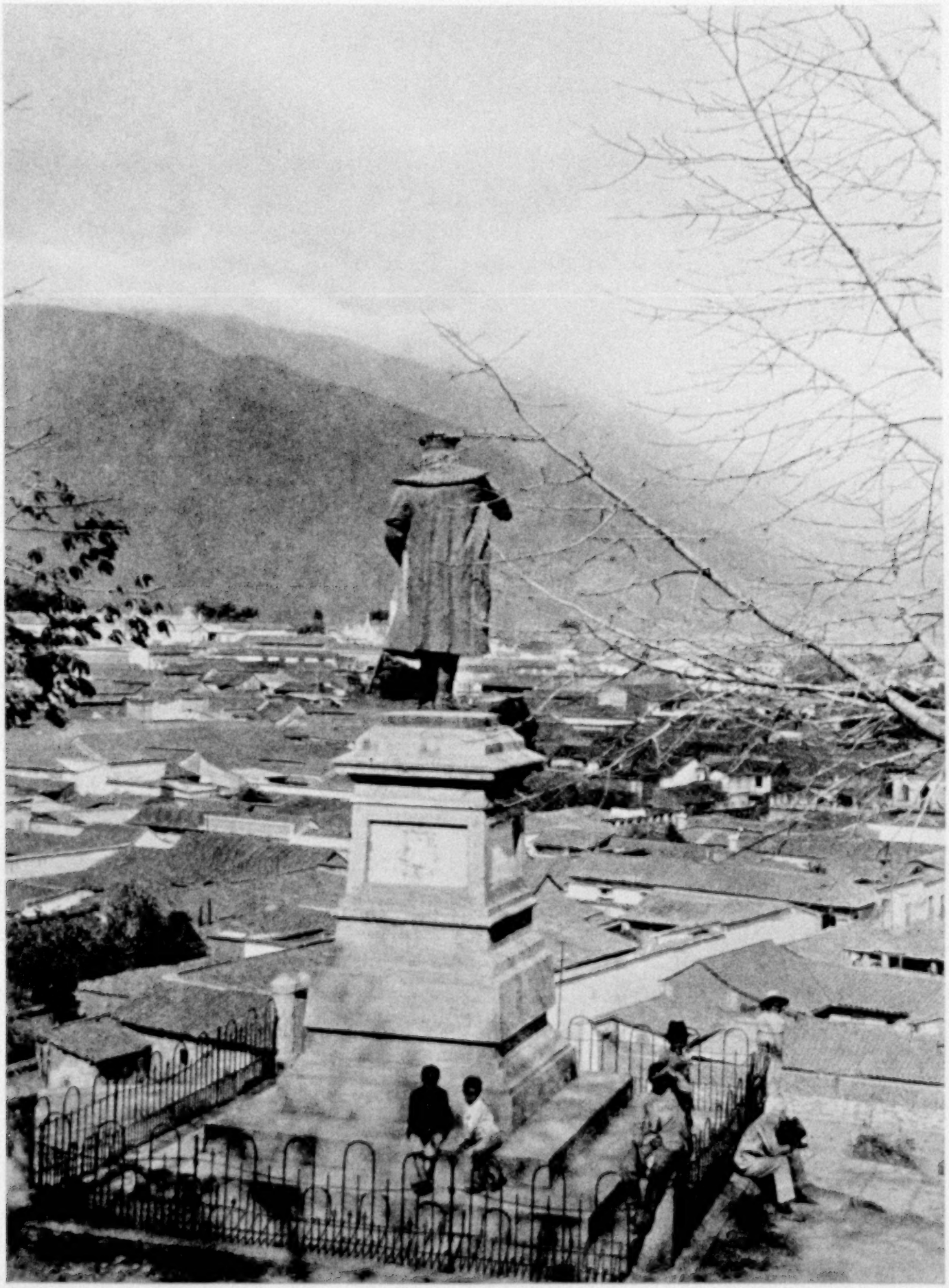
In Oriente Province, Bolivia, the San Miguel, which reaches the sea through the Amazon, after stealing around the Continental Divide in the Serra Aguapehy Hills, seems bent on capturing the waters that belong to the Rio de la Plata's tributary, the Otuquis.

FROM HUDSON BAY TO GULF OF MEXICO IF MISSISSIPPI WERE AMAZON

Further to the northeast, in Matto Grosso Province, Brazil, the Paraguay River returns the compliment of the San Miguel by breaking through between the Serra Azul and the Serra do Tombador into the drainage basin of the headwaters of the Arinos branch of the Tapajóz, a tributary of the Amazon. Two attempts have been made to join these two rivers by a canal—in 1713 and 1845.

In several places, canals five miles long would give free communication by inland waterways between Pará and Buenos Aires.

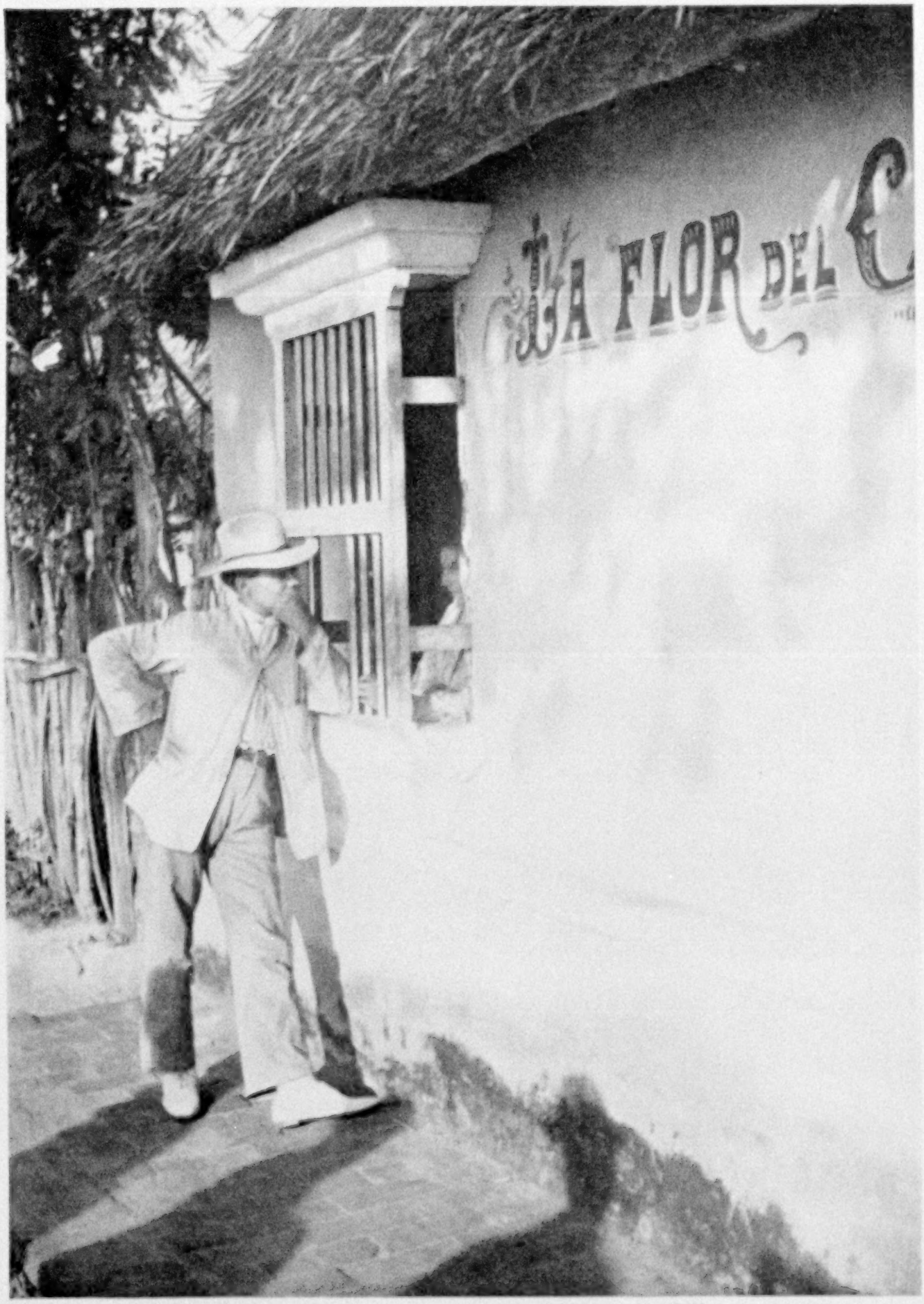
The great length of the navigable reaches of the principal rivers of South America and their major tributaries more than compensate for the lack of indented coast-lines. The Missssippi, "Father of Waters," and its tributaries, have seventeen thousand miles of navigable waters, the major portion exceedingly shallow. The Amazon and its tributaries have



Photograph by Frederick I. Monsen

COLUMBUS IN BRONZE OVERLOOKING CARACAS, VENEZUELA'S CAPITAL OF PERPETUAL SPRING

Situated in a fertile valley 3,000 feet above sea-level is the city of the nativity of Simon Bolivar, the great Liberator of South America. It lies six miles south of Venezuela's principal seaport, La Guaira, with which it is connected by a railroad that winds upward from the shore by a serpentine route twenty-four miles long.



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A ROMEO-AND-JULIET BALCONY SCENE IN BARRANQUILLA, COLOMBIA

But life is not all romance in this city near the mouth of the Magdalena River. It is the principal commercial center of the Republic of Colombia and the starting point for the nine-day trip, by stern-wheel steamer of the Mississippi River type, to La Dorada, 600 miles up the Magdalena, where the traveler transfers to a train for a 20-mile ride, then changes to mountain mules for the final lap of his journey, through magnificent Andean scenery, to the inland capital of Bogotá.

Photograph by K. V. Gizycki

INDIANS BRINGING THEIR PRODUCE TO THE MARKET OF LA PAZ: BOLIVIA

Few cities in the world can rival La Paz in beauty and grandeur of setting. Although situated at an elevation of nearly two and a half miles above sea-level, it is surrounded by a vast amphitheater of still loftier mountains. The grades of the city are so steep that many of the burdens are borne by mules, donkeys, llamas, and Indians.

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STUDYING THE LAND OF THE INCAS FROM THE DECK OF A PASSING STEAMER: A GLIMPSE OF MOLLENDO, CHIEF SEAPORT OF SOUTHERN PERU

Spread out at the base of a hill, with its varihued houses glistening in the sun, Mollendo presents an attractive appearance at a distance; but it is not an ideal port, for passengers are landed through the surf in native rowboats. As the city is a railway outlet not only for southern Peru, but also for northern and central Bolivia, it has the distinction of a "double-jointed" custom-house, first for imports into Peru and second for those which are to be carried through Peruvian territory to Bolivia.

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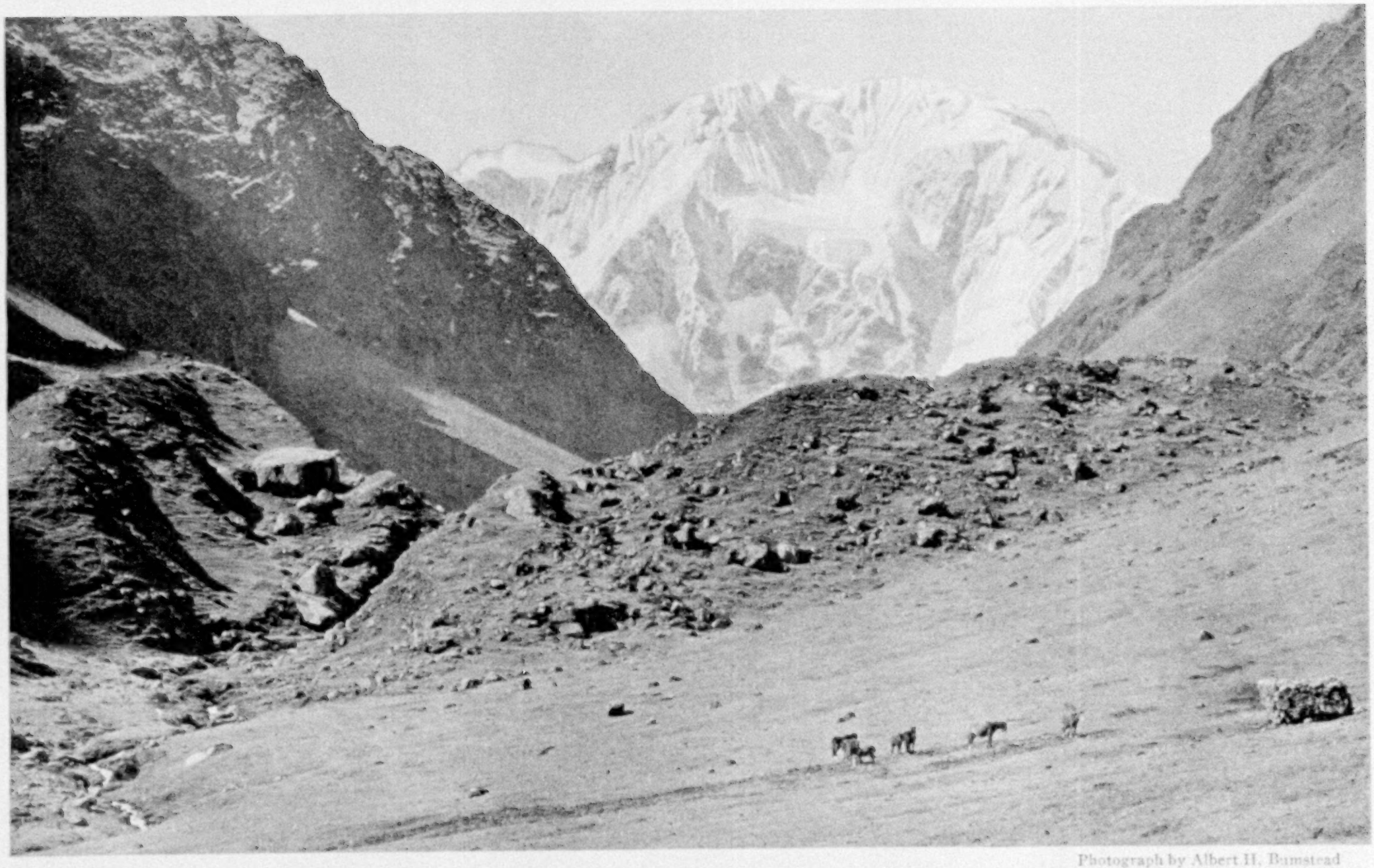

Photograph by Albert H. Bumstead

MT. SALCANTAY, AN ANDEAN JUNGFRAU

This majestic peak, in central Peru, standing guard over Machu Picchu, the Lost City of the Incas, is nearly a mile and a half higher than the famous "Virgin Mountain" of the Alps, however. The rocks in the foreground mark the former position of the foot of a glacier which comes down from the mountain and now terminates a mile up the valley.

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GRAPES OF TACNA, NORTHERN CHILE

In the heart of a fertile Andean valley nestles the little city of Tacna, capital of the province of the same name and connected by rail with its seaport, Arica, forty miles distant. Here the Chileans won a victory over the Peruvians in 1880, and four years later the vanquished nation ceded the province of Tacna to the victors for a period of ten years, at the end of which time there was to have been a plebiscite, but the plebiscite has never been settled. Hence South America's "Silesia."

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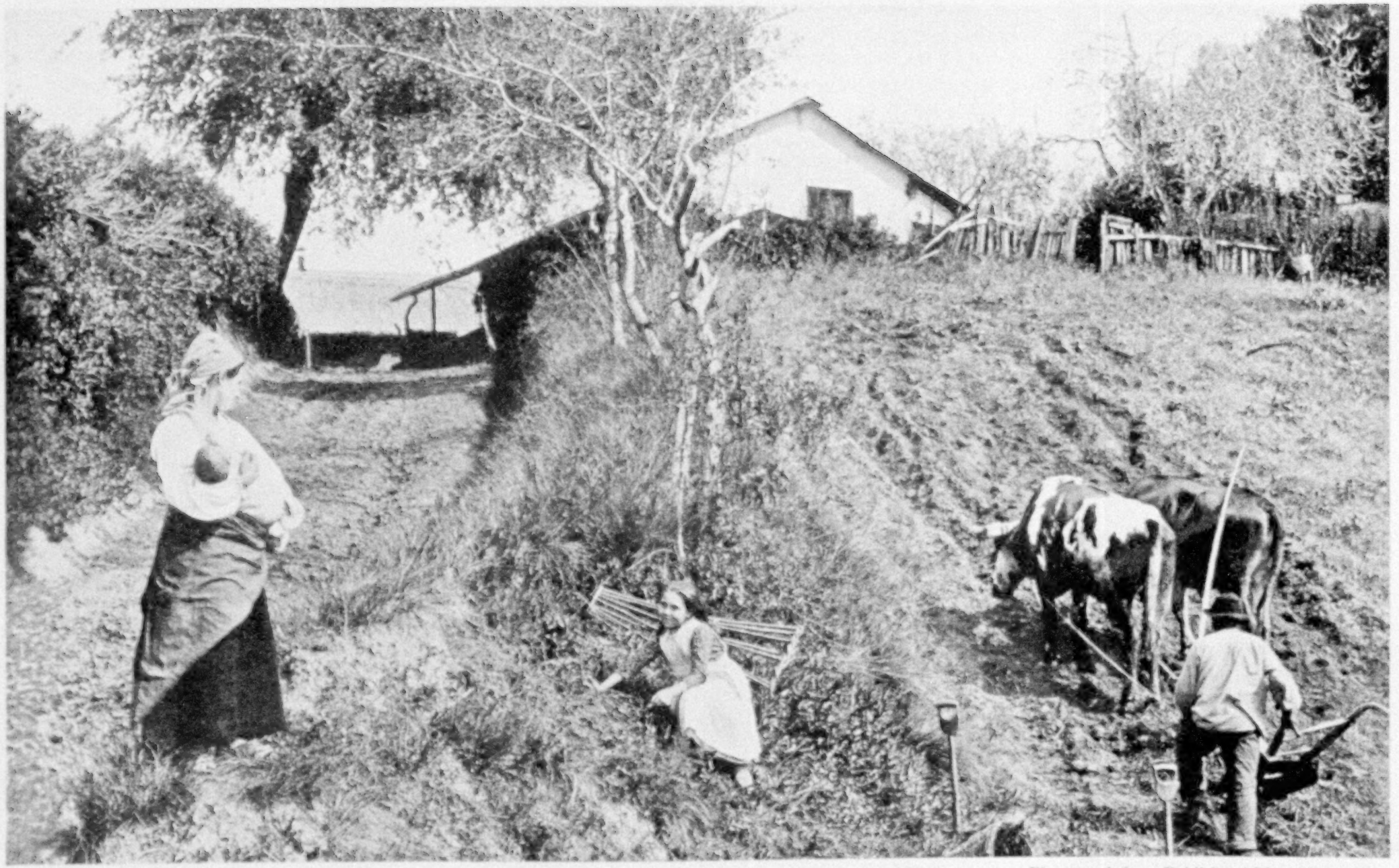
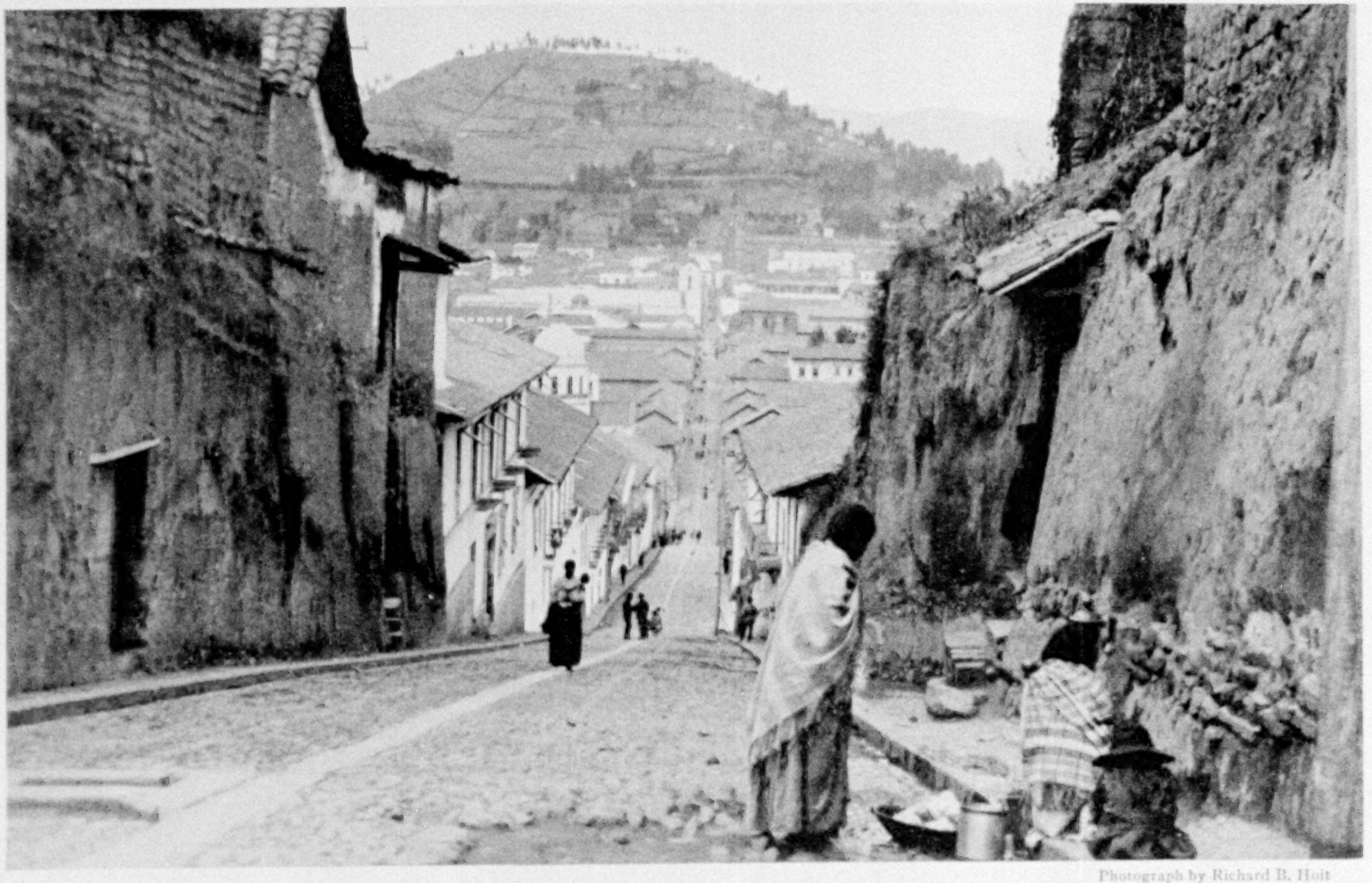


Photograph from Publishers' Photo Service

FARM LIFE IN CENTRAL CHILE

The fame of Chile's nitrate mines, in the arid zone of the north, has caused the outside world to lose sight of this country's splendid resources in field and forest, yet nearly one-half the population is engaged in agricultural pursuits, the principal crops being wheat, barley, maize, beans, potatoes, and grapes.



Photograph by Richard B. Hoit

ECUADOR IS JUSTLY PROUD OF ITS UNIQUE CAPITAL, QUITO

Although "perched upon the Equator," the city enjoys a most salubrious climate, for there are only a few capitals in the world which have so great an elevation—more than 9,000 feet above sea-level. The Indians are the chief burden-bearers of Ecuador, and the flat stones laid in the center of the street constitute their runway.

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Photograph from F. Lamson Scribner

FUR-CLAD INDIANS OF SOUTHERN ARGENTINA

Magellan, the circumnavigator, described Patagonia, the home of these people, as a land "stark with eternal cold," and other travelers have called it the "Siberia of South America"; but, like Siberia, it is capable of great development. The splendid specimens of mankind shown above suggest the origin of the name, Patagonians—giants with big feet. Tradition says that members of one of the maritime tribes of this region make a practice of throwing their women overboard to lighten their canoes in a storm.

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THE SQUARE AND MONUMENT IN BUENOS AIRES WHICH COMMEMORATE THE INDEPENDENCE OF ARGENTINA

In 1910 the Argentine Republic celebrated the centennial of the Revolution de Mayo, by which the people renounced allegiance to Spain. Many countries presented the republic with commemorative statuary symbolic of the occasion, the gift of the United States being a life-size bronze figure of George Washington.

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MOST ARGENTINE GAUCHOS PLAY THE GUITAR AND IMPROVISE WORDS FOR POPULAR AIRS

The young lady in the audience is sipping her maté, the popular Paraguay tea. Distinguishing features of the costume of the gaucho, or South American cowboy, are the wide, often brightly colored Turkish trousers, tucked into the boots, sombrero, white shirt, and scarf. At the right are asados—sides of mutton speared by metal shafts and stuck into the ground. A fire is built around, and while the roasting proceeds claret wine is poured over the meat. This form of barbecue is very popular in South America.

A RANCHER'S FARM IN PROSPEROUS URUGUAY

Although the smallest of the South American republics, Uruguay is one of the wealthiest and most progressive. It is a vast pasture, unmarred by deserts, mountains, or barren lands, upon which graze millions of cattle and sheep. Montevideo, the capital, with a population equal to pre-war Washington, is one of the healthiest communities in the world. Every night exactly at 8 o'clock the lights of the city are momentarily dimmed, enabling all its citizens to set their watches and clocks by standard time—a practice which is being emulated in other progressive centers throughout South America.

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Photograph courtesy Philadelphia Commercial Museum

FAMILY TRAVEL IN THE PROVINCE OF PARANÁ, BRAZIL, IS REMINISCENT OF OUR FORTY-NINERS

These pioneers in the fertile but only partly explored state of southern Brazil which stretches from the Atlantic Ocean to the Paraná River have stopped for their evening meal. Paraná produces much coffee, cotton, and manioc, besides cattle. The town on the horizon is Castro, 85 miles north of the provincial capital, Curityba.

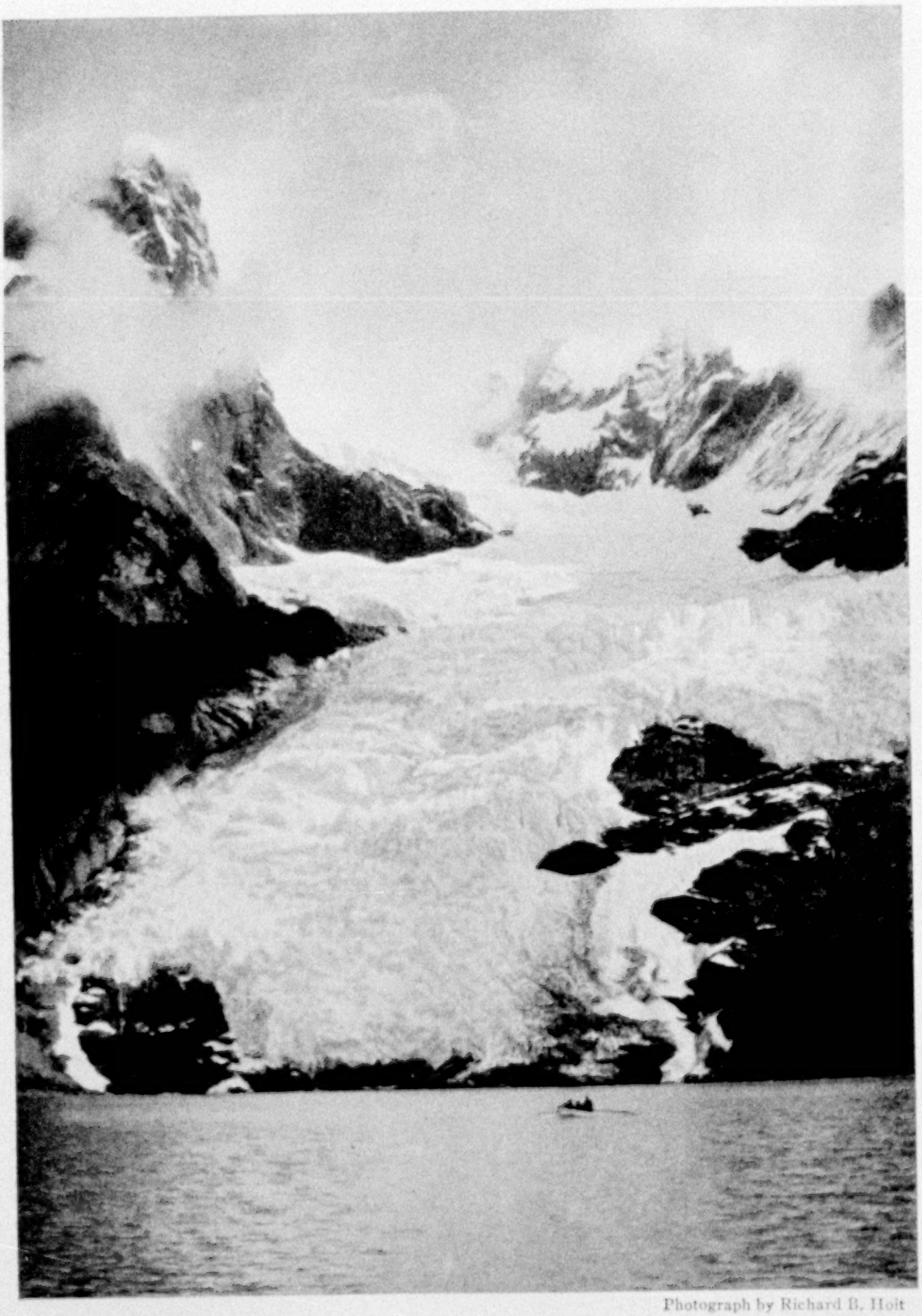
THIS PARAGUAY INDIAN'S POWERFUL BOW BELIES HIS REPUTATION FOR TIMIDITY

He is a member of the once numerous but fast vanishing Guayaquis tribe inhabiting the fertile region between the Paraguay and Paraná rivers. His head-dress is made of jaguar skins; his fingers and feet indicate that he is a victim of elephantiasis. In the background are the remains of one of the famous missions built by the Jesuits many years ago.

Photograph by Eugene Klein

SHE LIVES IN BRITISH GUIANA, BUT HER HOME IS INDIA

More than a third of the population of Great Britain's only colony in South America consists of East Indians who were brought to the Western Hemisphere to work on the Guiana sugar plantations after the abolition of slavery. This young woman, like all the other members of her race in South America, has lost caste in crossing the ocean and will be held in disrepute if she ever returns to her homeland.



Photograph by Richard B. Holt

NEAR THE END OF THE CONTINENT: BALMACEDA GLACIER, CHILE

The cloud-robed peak at the left towers 7,200 feet above the majestic river of ice, as it slowly slips into the waters of Last Hope Sound. Chile is the longest, narrowest country in the world. If placed along our Atlantic seaboard, it would extend from northern Maine to the Panama Canal, yet at no point is it wider than the State of California.

twice as many miles and several times as many capable of accommodating ocean-going steamers, which ascend 2,300 miles to Iquitos, in the territory in dispute between Peru and Ecuador. Vessels of 14-feet draft can ascend nearly 500 miles beyond this point.

It is as if one could go in a ship of fourteen-feet draft from New York to Salt Lake City by way of Chicago and Cheyenne. Such a navigable river makes the projected Lakes-to-the-Gulf "Fourteen-feet-through-the-Valley" waterway seem insignificant in comparison.

In 1899 the United States gunboat *Wilmington* went up the Amazon to Iquitos. If the Mississippi were as long and deep, such a warship might sail without encountering a single bar from the Gulf of Mexico to Hudson Bay.

The anchors shown on the map beside the various rivers of the continent indicate the head of steam navigation on each major stream, illustrating that South America possesses the finest system of natural inland waterways in the world.

AS MANY CONFLICTING BOUNDARIES AS EUROPE HAD

In the number of its conflicting boundary claims, political South America suggests the overlapping territorial disputes in Europe during the Peace Conference.

Colombia and Venezuela have rival claims to some 40,000 square miles; Colombia and Peru both claim an even larger area; Bolivia and Paraguay contend for a vast extent of territory in the Chaco region; Chile and Peru have a Silesia of their own in the valuable nitrate lands, which have been rocks of contention for many years, and Argentina and Chile both claim a number of islands above Cape Horn. All these disputed areas are adequately shown in colors on the map. Argentina also disputes Great Britain's possession of the Falkland Islands, which her maps designate as the Malvina Archipelago.

Europe is a land of monarchies, Asia is a land of empires and colonies, North America is the home of self-governing colonies and republics, Australia is entirely a self-governing colonial confederation, Africa has only two independent countries; but South America is pre-eminently the home of self-governing republics—ten of them, ranging in size from Brazil, which is larger than the United States, exclusive of Alaska, to Uruguay, which is not quite equal in area to Nebraska. There are only three colonial possessions of modest territorial extent on the continent, the Guianas—British, Dutch, and French.

THREE INVALUABLE INSET MAPS

The three inset maps will prove of fascinating interest to the lay reader as well as to the student. The great Andean ranges, with their snow-capped peaks and the vast valleys of the three principal river basins are strikingly presented in the Physical Map. The Mean Annual Temperature Map will enable one to fix definitely in his mind the comparative climates in the two continents of the Western Hemisphere, remembering that the sudden sweep northward of the temperate lines on the western coast of South America is due jointly to the high elevation of the Andean system and the chilling waters of the Humboldt Current, which flows northward from the Antarctic, exercising an influence exactly opposite to that of our own Gulf Stream.

South America's wealth in natural resources is clearly presented in the Products Map, which shows the vast extent of the rubber forests of the Amazon basin, the regions from which Argentina, Paraguay, Uruguay, Colombia, and Venezuela draw their valuable exports of cattle, hides, mutton, and wool, the nitrate lands of Chile and Peru, the rich coffee, sugar, and cocoa plantations of Brazil, the Guianas, Venezuela, and Colombia, and the silver, copper, gold, iron, and tin deposits of the several republics.

In this Map of South America members of the National Geographic Society possess a cartographic product which in its wealth of accurate information and clarity of presentation is of unique excellence. It is believed that it will prove an important factor in promoting the commercial and friendly political relations with our neighbor republics of the Southern Hemisphere.

The United States has always commanded a large share of South America's foreign trade. In a recent year Argentina

XUM

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The United States has always commanded a large share of South America's foreign trade. In a recent year Argentina

Photograph by Joseph E. Pogue

A PICTURESQUE NATIVE BOAT AT BUENAVENTURA: COLOMBIA

bought three-eighths of her imports from us. Brazil spent in our country approximately one-half of her money for imports, and Chile gave us practically the same proportion of her foreign purchasings. Colombia was an equally good customer in proportion to her total importations, while Peru gave us nearly two-thirds of her total foreign orders. More than two-thirds of Venezuela's foreign business was done with American houses. Ecuador was also a good customer, looking to us for 45 per cent of her importations.

Bolivia, Paraguay, and Uruguay gave American exporters a smaller percentage of their orders—one-fifth in the case of the first two, and only an eighth in the case of Paraguay.

In turn, we bought more than half of the exports of Chile, Colombia, Peru, and Venezuela, nearly half of those of Brazil, and nearly a third of those of Argentina.

PREVIOUS ARTICLES ON SOUTH AMERICA

In addition to the articles appearing in this number of THE GEOGRAPHIC, the following articles, previously published, will prove of interest, especially those describing the National Geographic Society's expeditions to Peru and the discovery of the Lost City of the Incas:

"The First Transandine Railroad from Buenos Aires to Valparaiso," by Harriet Chalmers Adams, May, 1910; "A Visit to the Brazilian Coffee Country," by Robert De C. Ward, October, 1911; "Explorations in Peru," April, 1912; "The Countries of the Caribbean," by Dr. William Joseph Showalter, February, 1913; "In the Wonderland of Peru," by Col. Hiram Bingham, April, 1913; "Some Personal Experiences with Earthquakes," by Rear-Admiral L. G. Billings, January, 1915; "The Story of Machu Picchu," by Col. Hiram Bingham, February, 1915; "Further Explorations in the Land of the Incas," by Col. Hiram Bingham, and "Staircase Farms of the Ancients," by O. F. Cook, May, 1916; "The Awakening of Argentina and Chile," by Dr. Bailey Willis, August, 1916; "Peru's Wealth-Producing Birds," by Dr. R. E. Coker, June, 1920; "Kaieteur and Roraima, the Great Falls and the Great Mountain of the Guianas," by Prof. Henry Edward Crampton, and "Rio de Janeiro, in the Land of Lure," by Harriet Chalmers Adams, September, 1920.

CARIBBEAN
(MAR CARIBE)

COLOMBIA

PANAMA

ECUADOR

DISPUTED TERRITORY

Cartagena
Barranquilla
Puerto Colombia
Santa Marta
Pueblo Viejo
Maracaibo
Sinamaica
Capatarida
Gulf of Maracaibo
Lake Maracaibo
Gulf of Darien
Gulf of Panama
Mosquito Gulf
Bocas del Toro
Panama Canal
Colon
Panama
Monteria
Carmen
Tolu
Corozal
Sincé
Magangué
Bahia
Sabanalarga
Valledupar
Chiriguana
Encontrados
Santa Barbara
Merida
La Grita
Cucuta
San Cristobal
Rubio
Pamplona
Bucaramanga
Socorro
Velez
Yarumal
Medellin
Honda
Tunja
Moniquira
Moraflores
Bogotá
Cali
Buenaventura
Bahia del Choco
Neiva
Pasto
Tumaco
Ipiales
Quito
Guayaquil
Cuenca
Ambato
Riobamba
Latacunga
Archidona
Tena
Napo
Coca
Santa Rosa
Canelos
San Antonio del Curaray
Iquitos
Nauta
Pto. Limon
Pto. Pardo
Pinchna
Mancallacta
Perrate
Loreto
Benjamin Constant
Tabatinga
Boa Vista
Santa Maria
Douro
Paita
Piura
Sechura
Bayóvar
Talara
Lobitos
Zorritos
Tumbes
Puna
Jurado
Punta Marzo
B. de Nabugu
Pta. Solano
Bahia Coqui
C. Corrientes
Ensenada Cotrips
Ensenada de Docampado
Pta. Agi
Pta. Coco
Timbiqui
Bahia Tumaco
Esmeraldas
Pta. Galera
C. San Francisco
Pedernales
Pta. Bailon
C. Pasado
Chone
Bahia de Caraquez
Bahia Manta
C. San Lorenzo
Pta. Ayampe
Manglar Alto
B. de Sta. Elena
Gulf of Guayaquil
Pta. Pariñas
Pta. Pariña
Pta. Pariñas
B. de Sechura
Pta. de Aguja
Pta. Aguja
Pta. Paita
Catacaos
Amazonas
Loreto
Yurimaguas
Lagarto Cocha
Orocué
Barbacoas
Juntas
Calamar
San Camilo
Pto. Paulino
Pto. Mercedes
Macaya
Ajaju
Aguarico
Coca
Agoyan
La Chorrera
El Encanto
S. Pedro
Union
Napo
Tigre
Pastaza
Marañon
Urarinas
Requena
Mazan
Pebas
Iquitos
Nauta
Mancallacta
Perrate
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Tabatinga
Boa Vista
Santa Maria
Douro
Orocué
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Pebas
Iquitos
Nauta
Mancallacta
Perrate
Loreto
Benjamin Constant
Tabatinga
Boa Vista
Santa Maria
Douro

BOUNDARY BY ECUADOR
BOUNDARY BY PERU
BOUNDARY CLAIMED BY ECUADOR

GALÁPAGOS ARCHIPELAGO
(TO ECUADOR)
Same Scale as Main Map
ABINGDON
TOWER
Pta. Albemarle
EQUATOR
C. Marshall
JAMES Ó SANTIAGO
Bonita Bay
Elizabeth Bay
ALBEMARLE Ó ISABELA
C. Norte
Agreda
CHATHAM
GRANDES Ó FLOREANA
HOOD

1 80° 2 75° 3
A B C D
10° 5° 0° 5°

70° 4 65° 5 60° Longitude West 6 from

N S E A

ARUBA (ORUBA)
CURAÇAO (Dutch)
BONAIRE (Du.)
Willemstad
Paraguana Peninsula
Buena Vista
La Vela
LAS AVES
LOS ROQUES
LA ORCHILA
LA BLANQUILLA
WEST INDIES (INDIAS OCCIDENTALES)
St. George
GRENADA (Br.)
LOS TESTIGOS
MARGARITA
LA TORTUGA
NUEVA ESPARTA
La Asuncion
Pampatar
TOBAGO (Br.)
Scarborough
Galera Pt.
Port of Spain
TRINIDAD (British)
San Fernando
Carupano
Rio Caribe
Paria Pen.
Pta. Piedra
Dragons Mouth
Gulf of Paria
Carenero
Carirubana
Puerto Cabello
Valencia
La Guaira
Caracas
FEDERAL DISTRICT
Victoria
Tocuyo
Coro
FALCON
LARA
Barquisimeto
Yaritagua
Carora
Quibor
Trujillo
Araure
San Carlos
Barbacoa
Sombrero
Tucupido
Calabozo
Sta. Maria de Ipire
Onoto
Aragua de Barcelona
Barcelona
Cumaná
Carúpano
Caripe
Cariaco
SUCRE
Aragua
Maturin
Piedras
Mouths of the Orinoco
Delta of the Orinoco
MONAGAS
Tucupita
DELTA
AMACURO
Barima Pta.
Moconoco Pta.
Playa Waini Pt.
Morawhanna
Barrancas
Guayana Vieja
Upata
Ciudad Bolivar
Sta. Maria
Unare
Barcelona
Pariaguan
ANZOATEGUI
Guanare
Papelon
El Baul
GUÁRICO
Calabozo
Altagracia
Nutrias
Calabozan
Barinas
ZAMORA
Guanare
PORTUGUESA
COJEDES
Valencia
Puerto Cabello
Tocuyo
Urbana
Parmana
Callao
Guacipati
Arakaka
Cuca
El Dorado
Georgetown (Demerara)
Barima
Waini
Barramanni
Pomeroon
Essequibo
Mahaicony
Abary
Rosignol
New Amsterdam
Corentyn
Nieuw
VENEZUELA
APURE
BOLIVAR
Cerro Curaco
Cerro Chanaro
Arahu
Arawak
Matope
Bartica
Berbice
Rockstone
Wismar
Skeldon
Mahaica
Mahaicony
Abary
Canje
Berbice
Corentyn
Nieuw
Araucá
Santos
Mata
Rapids
Atoro
Orinoco
Caroni
Cuyuni
Mazaruni
Puruni
Essequibo
Demerara
Mahaicony
Abary
Rosignol
New Amsterdam
Corentyn
Nieuw
Maipures
Greiba
Barbacoa
VICARIADA
BOUNDARY CLAIMED BY COLOMBIA
San Fernando de Atabapo
AMAZONAS
Baltazar
Victorino
Esmeralda
Pirata
Uraricuera
São Bento
Fte. da São Joaquim
Boa Vista do Rio Branco
Dada Nawa
Mavaca
Orinoco
Guainia
Casiquiare
Pasimoni
Merevari
Mt. Roraima
Mt. Chakbang
San Vicente
Santo Ignacio
MAVACA T.
SIERRA PACARAIMA
BRITISH GUIANA
DUTCH (SURIN
Mora
Annai
Yupukarri
Kurakaka
Ajupa
SERRA ACARAHY
Zurumata
Capé
Branco
Anauá
Jauaperi
Trombetas
Jatapu
Urucará
Faro
Tauapeçaçu
Manaos
Maracapurú
Iranduba
Manés
Itacontiara
Silves
Amazonas
Rio
Manaquiry
Berury
Abacaxis
Arrozal
Laranjal
Barra
Jaytena
Arvellos
Coary
Badajoz
Tefé
Amazon
Jurua
Juruá
Javary
Solimões
Ica
Fonte Boa
Tonantins
São Paulo de Olivença
Amatura
Tabatinga
Mosambi
Layeto
Tarapaca
Nuevo Progreso
Sierra Tapicapeco
Sierra Parima
Sierra Acaraby
Estevão
Cucuhy
Vaupés
Cururú
São Felipe
São Gabriel
Uyanary
Xibama
Nossa Senhora do Carmo
EQUATOR
Yauaretê
Taracuá
Trinidad
Umariaba
Maré
São Thomé
Uarirí
Cucuhy
Santa Isabel
Jauary
Calanaque
Arara
Thomar
Moreira
Barcellos
Rio Negro
Pesqueiro Real
Jauperi
Sta. Maria
Carvoeiro
Moura
Ayrão
São Joaquim
Tapura
L. Amaná
Jatuman
Tonantins
Fonte Boa
Solimões
Ica
Amatura
São Paulo de Olivença
Tabatinga
Mosambi
Layeto
Tarapaca
Badajoz
Tefé
Amazon
Jurua
Juruá
Javary
Arapary
Gavião
Fiquna
Campina
Purus
Boa Vista
Alto Aripuana
Madeira
Itaituba
Tapaua
Manicoré
Curucá
Araras
Taboral
Sapucaiyroca
Barda
Abacaxis
Arrozal
Laranjal
Urariba
Joao
Barcellos
Rio Negro
Sta. Maria
Carvoeiro
Moura
Ayrão
Tauapeçaçu
Maracapurú
Manaos
Iranduba
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Berury
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Araras
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Purus
Boa Vista
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Itaituba
Tapaua
Manicoré
Curucá
Holmia
Mt. Roraima
Mt. Chakbang
San Vicente
Santo Ignacio
MAVACA T.
Pirata
São Bento
Fte. da São Joaquim
Boa Vista do Rio Branco
Dada Nawa
Ajupa
SERRA ACARAHY
Zurumata
Capé
Branco
Anauá
Jauaperi
Trombetas
Jatapu
Urucará
Faro
Tauapeçaçu
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Maracapurú
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Manés
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Javary
Arapary
Gavião
Fiquna
Campina
Purus
Boa Vista
Alto Aripuana
Madeira
Itaituba
Tapaua
Manicoré
Curucá

Longitude West 6 from Greenwich 55° 7 50° 8

SOU

THE NA

0 50

BRITISH GUIANA

DUTCH GUIANA (SURINAME)

FRENCH GUIANA

Georgetown (Demerara)

New Amsterdam

Paramaribo

Cayenne

Mouths of the Amazon

EQUATOR

Pará (Belém)

MARAJÓ

Santarém

Manaos

Obidos

Almeirim

Macapá

Oyapock

Mt. Tourova

Monte Negro (Amapá)

Serra Acarary

Serra Tumuc-Humac

Morro Pedrim

Ilha de Joanes

Ilha de Gurupá

Rio Amazonas

Rio Pará

Rio Trombetas

Rio Jamundá

Rio Tapajós

Rio Xingú

Rio Araguary

Rio Oyapock

Rio Maroni

Rio Corentyn

Rio Essequibo

Rio Demerara

Rio Berbice

Rio Courantyne

Rio Pomeroon

Rio Moruca

Rio Waini

Rio Barima

Rio Aruka

Rio Mazaruni

Rio Cuyuni

Rio Mahaicony

Rio Abary

Rio Nickerie

Rio Coppename

Rio Saramacca

Rio Commewyne

Rio Marowijne

Rio Mana

Rio Iracoubo

Rio Sinnamary

Rio Kourou

Rio Tonat

Rio Approuague

Rio Camopi

Rio Uaupés

Rio Negro

Rio Branco

Rio Jauaperi

Rio Trombetas

Rio Nhamundá

Rio Paru

Rio Jary

Rio Curuá

Rio Maecuru

Rio Jamundá

Rio Ituxi

Rio Purus

Rio Juruá

Rio Javary

Rio Içá

Rio Japurá

Rio Solimões

Rio Madeira

Rio Tapajós

Rio Xingú

Rio Iriri

Rio Curuá

Rio Arapiuns

Rio Maués

Rio Abacaxis

Rio Canumã

Rio Paraná-Mirim

Rio Jacundá

Rio Tocantins

Rio Moju

Rio Acará

Rio Capim

Rio Guamá

Rio Gurupy

Rio Piriá

Rio Turyassú

Rio Gurupy-Mirim

Rio Caeté

Rio Piria

Rio Maracá

Rio Cunany

Rio Calçoene

Rio Oyapock

Rio Camopi

Rio Tapanahoni

Rio Lawa

Rio Marowijne

Rio Litani

Rio Sipaliwini

Rio Corentyn

Rio Courantyne

Rio Berbice

Rio Demerara

Rio Essequibo

45° 9 40° 10 35° 11

MAP OF

OUTH AMERICA

PREPARED ESPECIALLY FOR

NATIONAL GEOGRAPHIC MAGAZINE

GILBERT GROSVENOR, EDITOR

Scale of Statute Miles

50 100 200 300 400

Kilometers

0 50 100 200 300 400 500

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EXPLANATION

Capitals of Countries

Capitals of States

Railroads (in operation)

Railroads (under construction or proposed)

Head of Steam Navigation

Glaciers

Marshes

The official language of South America is Spanish except in Brazil where it is Portuguese.

ABBREVIATIONS AND TRANSLATIONS

Arr., Arroyo (Rivulet)
B., Bahia (Bay)
Brazo, Braço (Arm)
Cach., Cachoeira (Rapids)
Chapada (Serrated Plateau)
Co., Cerro (Hill)
I., Isla, Ilha (Island)
L., Lago, Lagôa (Lake)
Morro (Hill)
Pantanal (Marsh land)
Paso (Pass)
Pt., Pta., Punta, Ponta, (Point)
Pto., Puerto, (Port)
Salar, Salina (Salt region)
Salto, (Waterfall)
S., Sa., Sierra, Serra (Mountain)

A B C D

10° 5° 0°

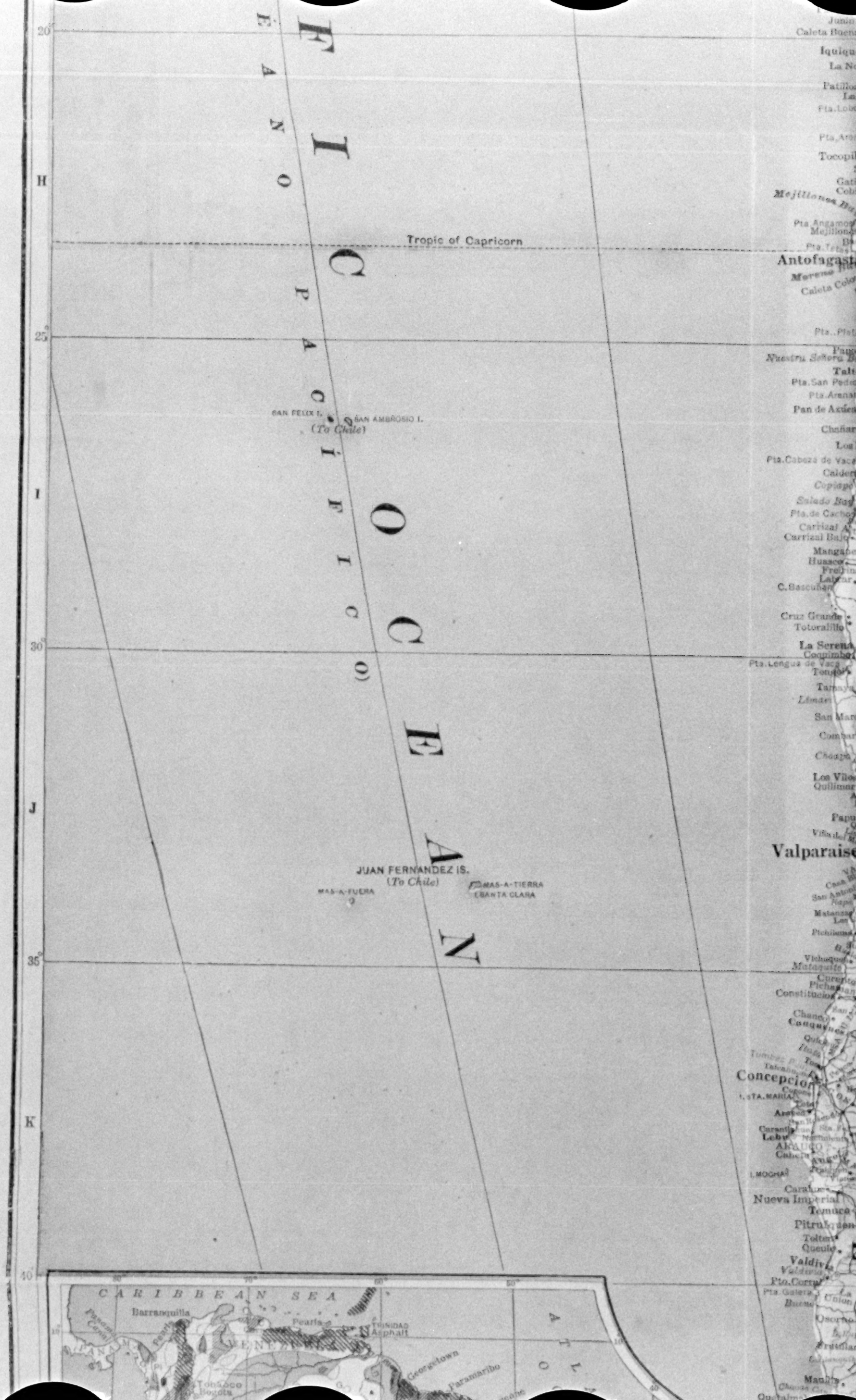
C. Gurupy
Pta. Tarumdua
B. de Tury-Assú
I. de S. JOÃO
Vizeu
Tury-Assú
Ponta Arêoca
B. de S. Marcos
B. de S. José
I. DE SANT'ANNA
Guimarães
Alcantara
Sta. Helena
Pinheiro
Maranhão (São Luiz)
Barreirinhas
Tutoya
I. DE STA. IZABEL
Amarração
Camocim
Acaraú
São Bento
Vianna
Morros
Arayoses
Tarauhyba
Granja
Trahiry
Moncão
Icapicuru Mirim
São Bernardo
Sant'Anna
Ceará (Fortaleza)
Pta. de Mucuripe
Januaria
Varjens Grande, Chapadinha
Brejo
Porto Alegre
Vicosa
Sobral
São Francisco
Aquiraz
Icatú
Corpatá
Mossoró
Cascavil
Choro
Redempção
Pacatuba
Jaguaribe
Codó
União
Barras
Ipú
Ipueiras
Baturité
Aracaty
Pedreiras
Caxias
Campo Maior
Quixeramobim
Russas
Areia Branca
Flores
Therezina
Limoeiro
Mossoró
Macáo
C. Calcanhar
Touros
C. de São Roque
Barra do Corda
Passagem Franca
Crateus
Independencia
Senador Pompeu
Assú
RIO GRANDE DO NORTE
Ceará-Mirim
Natal
Grajahú
Belem
Benjamin Constant
Tauá
Apody
Páo dos Ferros
Macahybas
São José do Mipibú
Goyaninha
A N H A O
C E A R A
Pta. Tarumdua
Pta. Arêoca
Pta. Mucuripe
Pta. Icatú
Pta. Calcanhar
Pta. Touros
C. de São Roque

ECUADOR
ORIENTE
TERRITORY
Gulf of Guayaquil
Guayaquil
Cuenca
Tumbes
Zorritos
Lobitos
Talara
Paita
Piura
Sechura
Bayóvar
Reventazón
Chiclay
Pacasmayo
Trujillo
Salaverry
Santa
Chimbote
Huarmey
Paramonga
Huacho
Callao
Lima
Chorrillos
Cerro Azul
Chincha Alta
Tambo de Mora
Pta. Huacas
Pta. Carretas
Pta. Azua
Pta. Doña María
Pta. Steep
Lomas
Atico
Pta. Pescadores
Camaná
Quilca
Islay
Mollendo
Pacocha
Arequipa
Iquitos
Nauta
Requena
Mancallacta
Pernate
Loreto
Amazon
Benjamin Constant
Bôa Vista
Santa María
Douro
Franklin
Constança
São Felipe
Liberdade
Cruzeiro do Sul
Villa Humayta
Villa Thaumaturgo
Villa Jordão
Sta. Cruz
Cocama
Contamana
San Jeronimo
Calleria
Pucalpa
Pto. Victoria
Pto. Bermudez
Cerro de Pasco
Huancavelica
Ayacucho
Ica
Nazca
Grande
Santa Lucia
Pta. Pescadores
Pta. Steep
Pta. Azua
Pta. Doña María
Pta. Huacas
Pta. Carretas
Pta. de Chilca
Pta. de Culebras
Pta. La Garita
Pta. Pariña
Pta. de Aguja
Pta. Paita
Pta. Ayampa
B. de Sta. Elena
B. de Sechura
B. Casma
Pto. Limon
Pto. Pardo
Pinches
Tigre
Corrientes
Morona
Pastaza
Marañon
Ucayali
Huallaga
Pacaya
Cucuyacu
Sicuani
Paucartambo
Cuzco
Tambobamba
Sta. Ana
Pto. Simariva
Pto. Bermudez
Pto. Victoria
Cerro de Pasco
Huancayo
Huancavelica
Ayacucho
Huancapi
Pisco
Ica
Chala
Caravelí
Aplao
Ocoña
Vitor
Cocachacra
Mejillones
Antofagasta
Tropic of Capricorn
PACIFIC
(OCÉANO)
PERU
MADRE
ACRE
(TERRITORIO DO
D
E
F
G
H
5°
10°
15°
20°

AMAZONAS
SELVAS
BOLIVIA
SANTA CRUZ
EL ORIENTE
CHUQUISACA (SUCRE)
LA PAZ
COCHABAMBA
ORURO
POTOSI
TARIJA
TARAPACA
ANTOFAGASTA
MATO GROSSO
EL BENI
Llanos de Mojos
Campo dos Amigos
Campo dos Veados
Campo dos Parecis
Llanos de Guarayos
Llanos de Chiquitos
SERRA DOS PARECIS
Manaos
Rio Amazonas
Rio Madeira
Rio Purus
Rio Javary
Rio Jurua
Rio Teffé
Rio Solimões
Rio Iça
Rio Japurá
Rio Içana
Rio Negro
Rio Branco
Rio Jamundá
Rio Trombetas
Rio Urucará
Rio Parú
Rio Paraná
Rio Paraguay
Rio Pilcomayo
Rio Bermejo
Rio Grande
Rio Mamoré
Rio Beni
Rio Madre de Dios
Rio Acre
Rio Abuna
Rio Orton
Rio Yata
Rio Guaporé
Rio Itenez
Rio Tapajoz
Rio Arinos
Rio Juruena
Rio Xingu
Rio Iriri
Rio Curuá
Rio Trombetas
Rio Nhamundá
Rio Uatumã
Rio Jatapú
Rio Jatyuca
Rio Urubaxi
Rio Purús
Rio Tarauacá
Rio Iaco
Rio Chandless
Rio Manuripi
Rio Tahuamanu
Rio Heath
Rio Itenez
Rio Guaporé
Rio Mamoré
Rio Beni
Rio Madre de Dios
Rio Abuna
Rio Acre
Rio Orton
Rio Yata
Rio Bermejo
Rio Pilcomayo
Rio Paraguay
Rio Paraná
Rio Grande
Rio Tapajoz
Rio Arinos
Rio Juruena
Rio Xingu
Rio Iriri
Rio Curuá
Rio Trombetas
Rio Nhamundá
Rio Uatumã
Rio Jatapú
Rio Jatyuca
Rio Urubaxi
Rio Purús
Rio Tarauacá
Rio Iaco
Rio Chandless
Rio Manuripi
Rio Tahuamanu
Rio Heath
Manaos
Tabatinga
São Paulo de Olivença
Loreto
Benjamin Constant
Mosambi
Amatura
Tonantins
Tarapaca
Tacna
São Joaquim
Carvoeiro
Moura
Ayrão
Urucará
Faro
Parintins
Tauapeçaçu
Maracanaquára
Itacoatiara
Serpa
Iranduba
Manáus
Abacaxis
Arrozal
Laranjal
Ubiriba
Borba
Sapucaia-roca
Taboral
Araras
Campina
Gavião
Arvellos
Coary
Jaytena
Manaquiry
Berury
Badajoz
Tonantins
Fonte Boa
Solimões
Ica
Jurua
Teffé
Juruá
Jutahy
Purús
Itaituba
Tapaua
Pikuna
Bôa Vista
Alto Arapuana
Manicoré
Curucá
Baetas
Canutama
São Felippe
Pto. Alegre
Labrea
Hyutanaham
Humaytá
Serra de Matamata
Matamata Rapids
Carapicha
Manoel Carlos
Campinas
Espirito Santo
Maniquiau
Pasto Grande
Calama
São Francisco
Villa Feijo
Seabra
Boca do Acre
Floriano Peixoto
Senna Madureira
Cachoeta
Pto. Acre
Pennapolis
Rio Branco
Mutuns
Pto. Velho
Santo Antonio
S. Antonio Falls
Jacy-Parana
Inferno Rapids
Salto de S. Simão
Salto Augusta
Marco
Taquaralsinho
Alto dos Apiacás
Panellas Rapids
Manoa
Tres Irmãos
Abunan
Araras
Ribeirão
Villa Bella
Villa Murtinho
Vata
Conjara Mirim
Riberalta
Ivón
San Pedro
Sena
Concepción
América
Etea
Fortaleza
Macu
Todos Santos
Guayaramerin
Maldonado
Pto. Heath
Pto. Pardo
Exaltación
Sta. Ana
San Pedro
Reyes
Tumupasa
Rurrenabaque
Trinidad
Apolo
Pto. Pando
Santa Ana
San Miguel de Huachi
Pto. Acosta
Huanay
Mapiri
Ixiamas
Sandia
Pelechuco
Puno
Arequipa
La Paz
Corocoro
Cochabamba
Oruro
Tacna
Arica
Iquique
Pisagua
Caleta Buena
Tocopilla
Antofagasta
Mejillones
Huara
Pica
La Noria
Patillos
Lagunas
Pta. Lobos
Pta. Arenas
Punta Alto
Calate
Guillagua
El Toco
Sta. Isabel
Gatico
Cobija
Chuquicamata
Calama
Quetena
Rincondada
Placilla
San Pedro de Atacama
Tocomao
Hastari
Tilcara
Huachacalla
Turco
Challapata
Huari
Sicasica
Viacha
Arque
Caracollo
Oruro
Sorasora
Poopo
Pitantora
Machacamarca
Cochabamba
Capinota
Totora
Arani
Vacha
Mizque
Aiquile
Acasio
Sacaca
Chayanta
Macha
Abaroa
Orinoca
Sevaruyo
Tiraque
Sipesipe
Tarabuco
Yotala
Sucre
Yamparaez
Zudañez
Pasaco
Mojotoro
Florida
Ahape
Valle Grande
Portachuelo
Warnes
El Cerro
Santa Cruz
Cotoca
Samaipata
Paurito
San Jose
S. Corazon
Robore
Santiago
Buñado de Izozo
S. Miguel
Corumba
Pto. Pacheco (Bahia Negra)
Albuquerque
Pto. Esperança
Pto. Roosevelt
Gutierrez
Curumbey
Piriti
Langunillas
Saucos
Caraguata
Tarvita
Tarauchipa
Potosi
Puna
Salinas de Garci Mendoza
Salinas
Rio Mulato
Yocalla
Llica
Tahua
Coipasa
Uyuni
Colcha
Huanchaca
Cuevo
Azurday
Parapiti
Tomabe
Culpa
Chita
Huara
Rio Grande
Cotagaita
Camargo
Atocha
Chiguana
Vol. Ollagüe
San Cristobal
San Agustin
Ancotan
Sta. Catalina
Quillagua
Tupiza
San Lorenzo
Montes (San Francisco)
Tarija
Concepcion
Padcaya
Yacuiba
Bermejo
Tartagal
Juntas de San Antonio
Embarcación
Sta. Victoria
Abra Pampa
Nazca Muerta
Oran
Villa Manso
Pto. Casado
Colonia Risso
Pto. Max
Pto. Pinasco
Horqueta
Concepcion
Pozo Alegre
Pto. Murtipho
Harrango Branco
Fuerte Olimpo
Miranda
Tamengo
Tacuary
Yacuiba
Bermejo
Tartagal
Montes (San Francisco)
Tarija
Concepcion
Padcaya
Yacuiba
Bermejo
Tartagal
Juntas de San Antonio
Embarcación
Sta. Victoria
Abra Pampa
Nazca Muerta
Oran
Villa Manso
Pto. Casado
Colonia Risso
Pto. Max
Pto. Pinasco
Horqueta
Concepcion
Pozo Alegre
Pto. Murtipho
Harrango Branco
Fuerte Olimpo
Miranda
Tamengo
Tacuary
UNDEFINED BOUNDARY
BOUNDARY CLAIMED BY PARAGUAY
BOUNDARY CLAIMED BY PERU
TELEGRAPH LINE

Alemquer
Faro
Urucará
Juruty
Farintins
Barreirinha
Boim
Santarem
Porto de Moz
Veiros
Pombal
Souzel
Pto. Victoria
Alta Mira
Cach. do Jenipabo
Cach. do Iriri
Cach. do Araucurel
Cach. do Piranhacuara
Cach. das Manbabas
Cach. da Pedra Secca
Cach. da Martona
Oeiras
Carnetá
Igarapé Miry
Moju da Bôa Vista
Acará
Capim
Sta. Helena
Mocajuba
Baião
Patos
Matacurá
Alcobaça
Gurupy-Mirtin
Serra Tipicumbá
Januaria
Aldeia
Itaboca
Areão
Bananal
Serm. da Desordem
Praia da Rainha
São João do Araguaya
Imperatriz
Conceição
São Vicente
Bôa Vista
Philadelphia
Carolina
Riachão
São Antonio da Balsas
Pedro Affonso
Victoria
Porto Nacional
Carmo
Natividade
Peixe
Conceição
Taguatinga
Palma
Arrayas
Chapéo
São Felix
Cavalcante
São Domingos
Sitio da Abbadia
Amaro Leite
São José do Tocantins
Pilar
Leopoldina
Itacayú
Goyaz
Pyrenopolis
Jaraguá
Formosa
FUTURO DISTRICTO FEDERAL
Corumba
Curralinho
Sta. Luzia
Bomfim
Allemão
Bella Vista
Campo Formoso
Pirapitinga
Sta. Cruz
Morrinhos
Ipamery
Sant'Anna dos Alegres
Parachatú
João José
Rio Bonito
Rio Verde
Jataby
Mineiro
Corumbahyba
Catalão
Araguary
Monte Alegre
Monte Carmello
Uberabinha
Patrocinio
Prata
Uberaba
Araxá
São Pedro de Alcantara
Sant'Anna do Paranahyba
Barretos
Villa Olympia
Rio Preto
Jupiá
Anhangahy
Araçatuba
Pennapolis
Jacotinga
Barley
Indiana
Pto. Tibirica
Pto. Murtinho
Bella Vista
Colonia Risso
Pto. Max
Pouso Pora
San Salvador
Horqueta
Conception
Pta. Ybapobó
Ipehu
Lima
Pto. Xavier da Silva
S. Pedro
Jacarehinho
Ribeirão Claro
S. Jeronymo
Thomazina
São Paulo
Piedade
Capão Bonito
Paxina
Ytaporanga
Ytapetininga
Sorocaba
Tatuhy
Jundiahy
Campinas
Amparo
Lençóes
S. Manoel
Pirassicaba
Rio Claro
Limeira
Mogy Mirim
Mogy Guassú
Franca
Ribeirão Preto
Batataes
Casa Branca
Caldas
Campanha
Altenas
Passos
Piumhy
Formiga
Carmo do Rio Claro
Jaboticabal
Taquaritinga
Itapolis
Ibitinga
Araraquara
Bebedouro
Ayanhandava
Pitangueiras
Villa Nova
Rio Preto
Nuporanga
Olimpia
Fuerte Olimpo
Barranco Branco
Nioac
Pto. Pacheco (Bahia Negra)
Albuquerque
Pto. Esperança
Pto. Rooseve
Corumba
Coxim
Pantanal do Taquary
Pantanal do Nabileque
Pantanal do Negro
Sant'Anna do Paranahyba
Miranda
Aquidauana
Campo Grande
Rio Branco
Rio Verde
Rio Pardo
Rio Negro
Rio Taquary
Rio Aquidauana
Rio Miranda
Rio Apa
Rio Nioac
Rio Perdido
Rio Vaccaria
Rio Ivinhema
Rio Pardo
Rio Paranapanema
Rio Tieté
Rio Grande
Rio Paraná
Rio Paraguay
Rio Tocantins
Rio Araguaya
Rio Xingú
Rio Tapajóz
Rio Curuá
Rio Jamanxim
Rio Crepory
Rio Caripy
Rio Maecurú
Rio Trombetas
Rio Nhamundá
Rio Jary
Rio Jamundá
Rio Urubú
Rio Itacoatiara
Rio Madeira
Rio Mamoré
Rio Guaporé
Rio Itenez
Rio Paraguay
Rio Negro
Rio Branco
Rio Uraricoera
Rio Tacutú
Rio Surumú
Rio Parimé
Rio Cotingo
Rio Maú
Rio Ajarany
Rio Tacutú
Rio Mahú
Rio Uatumá
Rio Nhamundá
Rio Trombetas
Rio Maecurú
Rio Caripy
Rio Crepory
Rio Jamanxim
Rio Curuá
Rio Tapajóz
Rio Xingú
Rio Araguaya
Rio Tocantins
Rio Grande
Rio Paraná

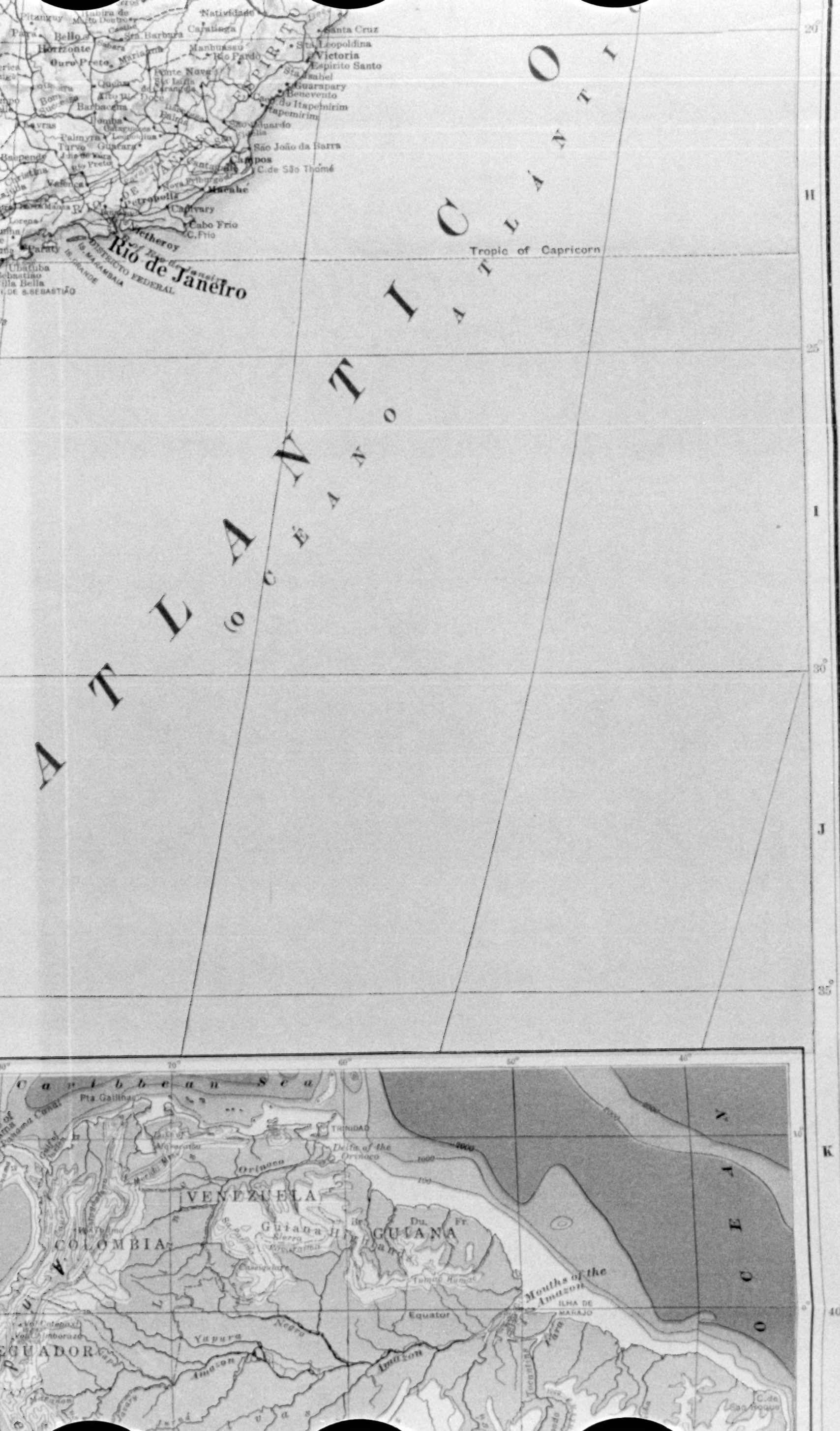
Maranhão (São Luiz)
Alcantara
Sta. Helena
Guimarães
Cururupú
Barreirinhas
Tutoya
Camocim
Acarahú
Parnahyba
Granja
Tianhy
Foraleza
Ceará (Fortaleza)
Pta. de Mucuripe
Aquiras
Cascavel
Choro
Jaguaribe
Aracaty
União
Areia Branca
C. Calcanhar
Touros
C. de São Roque
Ceará-Mirim
Natal
Macahyba
Macáo
Mossoró
Assú
Apody
RIO GRANDE DO NORTE
Agoas Bellas
São José do Mipibú
Goyaninha
Conguaretama
Nova Cruz
Acary
Martins
Pombal
Souza
Cajazeiras
Guaratyra
Mamanguape
Cabedello
Parahiba (Parahyba)
Espirito Santo
Goyanna
Nazareth
Iguarassú
Olinda
Pernambuco (Recife)
Victoria
Cabo
Escada
Rio Formoso
Barreiros
Quipapa
Porto Calvo
Bom Conselho
Garanhuns
Bonito
Belmonte
Floresta
Calabo
Bom Jesus
Petrolina
Joazeiro
Jatoba
Paulo Affonso
Palmeira dos Indios
Atalaia
Pirapinhas
ALAGOAS
Maceió
Alagôas
Traipú
Pão de Assucar
Collegio
Cururipe
Penedo
Porto da Folha
Propria
SERGIPE
Capella
Itabayana
Aracajú
São Christovão
Estancia
Monte Santo
Cumbe
Queimadas
Simão Dias
Lagarto
Jacobina
Itapicurú
Conde
Timbó
Alagoinhas
Feira de Sant'Anna
Castro Alves
Nazareth
Bahia (São Salvador)
Amargosa
São Miguel
Maracás
Antarem
Camamú
Contas
Boa Nova
Poções
Conquista
Itabuna
Ilhéos
Una
Cannavieiras
Belmonte
Santa Cruz
Porto Seguro
Villa Verde
Francoso
Prado
Alcobaca
Carravellas
18. ABROLHOS
Viçosa
Conceição da Barra
São Matheus
Linhares
Victoria
Espirito Santo
Guarapary
Benevento
Rio Pardo
Manhuassú
Santa Cruz
Sta. Leopoldina
Natividade
Caratinga
Figueira
Theophilo Ottoni
Minas Novas
Araçuahy
Bocayuva
Grão-Mogol
Salinas
Montes Claros
Vigia
Rio Pardo
Tremedal
Januaria
Pedras
Jacaré
Condeúba
Caetité
Carinhanha
Pedra Branca
Gado Bravo
Santa Maria
Correntina
Bom Jesus da Lapa
Bom Jesus do Rio de Contas
São João de Paraguassú
Sant'Anna dos Brejos
Urubu
Campestre
Andarahy
Lençoes
Mundo Novo
Morro do Chapeo
Colle
Serrinha
Irará
Campestre
Feira de Sant'Anna
Castro Alves
Nazareth
Amargosa
São Miguel
Maracás
Argollinho
Jaguaripe
Valença
Cayrú
Camamú
Contas
Boa Nova
Poções
Conquista
Itabuna
Ilhéos
Una
Cannavieiras
Belmonte
Santa Cruz
Porto Seguro
Villa Verde
Francoso
Prado
Alcobaca
Carravellas



FIJO OCEAN
PACÍFICO
Tropic of Capricorn
SAN FELIX I.
SAN AMBROSIO I.
(To Chile)
JUAN FERNANDEZ IS.
(To Chile)
MAS-A-FUERA
MAS-A-TIERRA
SANTA CLARA
20°
25°
30°
35°
40°
H
I
J
K
Antofagasta
Valparaiso
Concepcion
Nueva Imperial
Valdivia
CARIBBEAN SEA
Barranquilla
Pearls
TRINIDAD
Asphalt
Georgetown
Paramaribo
Tobacco
Bogota

ANTOFAGASTA
ATACAMA
CATAMARCA
LA RIOJA
SAN JUAN
MENDOZA
SAN LUIS
CÓRDOBA
SANTIAGO DEL ESTERO
TUCUMAN
SALTA
JUJUY
LOS ANDES
POTOSI
TARAPACA
CHUQUISACA (SUCRE)
TARIJA
CHACO
FORMOSA
PARAGUAY
CORRIENTES
ENTRE RIOS
SANTA FE
BUENOS AIRES
LA PAMPA
NEUQUEN TERRITORY
RIO NEGRO TERRITORY
ARGENTINA
UNDEFINED BOUNDARY
Pacific Ocean
Atlantic Ocean
Salta
Jujuy
Tucuman
Santiago del Estero
Catamarca
La Rioja
San Juan
Mendoza
San Luis
Córdoba
Santa Fe
Parana
Rosario
Buenos Aires
Bahia Blanca
Asunción
Formosa
Corrientes
Chilecito
Cafayan
Metán
Pitos
Fortin San Bernardo
Maloque
Campo Gallo
Fortin Irigoyen
Fortin Presidencia Roca
Avia Terai
Charata
Quimili
Villa Angela
Puna
Añatuya
El Zorro
Los Olmos
Sta. Lucia
Tostado
Vera
Goya
Lavalle
Mercedes
Caruz Cuati
Oncativo
Villa Maria
Villa Nueva
Rio Cuarto
San Luis
Mercedes
Villa Mercedes
Zanjitas
Nacuñán
Sarmiento
Buchardo
Villa Valeria
Canada Verde
Bagual
Realicó
Villegas
Ingeniero Luiggi
Chanilao
Victorica
Telen
Sta. Rosa de Toay
Toay
Cereales
Rivera
Doblas
General Acha
Carhué
Darragueira
Remecó
Huecal
Abramo
Villa Iris
Pringles
Tres Arroyos
Cooper
Copetonas
Pto. Militar
Sayda
Alsina
Villarino
Rio Colorado
Choele-Choel
Rio Negro
Colorado
El Cuy
Negro Muerto
Conesa
Viedma
San Antonio
Carmen de Patagones
Pta. Rubia
Pta. Main
Golfo de San Matias
Pringles
Talcahuala
Valcheta
Colonia Epulafquen
Los Menucos
Maquinchao
Huanuluan
Pilcaniyeu
Bariloche
Pto. Moreno
Neuquen
Chos Malal
Campana Mahuida
Las Lajas Neuquen
Cuesta Vidal
Chico Salitos
Temuco
Pitrufquen
Villarica
Valdivia
Osorno
Union
Rio Bueno
Valle Fertil
Jachal
Iglesia
Tama
Malanzan
Catuna
Mogna
Bella Vista
San Carlos
Huerta
Chepes
Cruz del Eje
La Puerta
Sta. Rosa
Achiras
Rio Cuarto
Reduccion
Las Cañadas
Cruz Alta
Constitucion
Pilar
Villa Maria
Villa Nueva
Bell-Ville
Chucul
La Laguna
Oliva
Gelvez
Irigoyen
Diamante
Nogoya
Victoria
Gualeguaychu
Concepcion del Uruguay
Colon
Paysandu
Salto
Concordia
Federacion
Helvecia
Nare
Esperanza
Rafaela
Sunchales
Esperanza
Nueva Esperanza
Maloque
Antilla
Alemania
Burruyacu
Chile
Las Cejas
Tinlina
Tafi
Simoca
Clodomira
Quimili
Sta. Justina
Loreto
Mayaro
Salavina
Frias
La Meleada
Colonia Dora
Ojo de Agua
Recreo
San Martin
Cebollar
La Rioja
Chilecito
Capayan
Chumbicha
Mesan
Salado
Pomán
Catamarca
La Cocha
Sanja
Quanta
Loogasta
Fiambala
Andalgala
Belen
Concepcion
Tafi
Famillia
Bimboca
Madrid
Santiago del Estero
Sta. Maria
Vipos
Sta. Ana
Sta. Rosa
Cafayate
Antigua Fortaleza de la Sierra
Amaicha
Pueblo Handin
Chañarmuyo
Los Pozos
Incahuasi
Salado
Toledo
Caldera
Copiapo
Paquis
Taltal
Cachinal
Cachinal de la Costa
Salinitas
Guanaco
Refresco
Canchas
Desert
Juncal
Carrizalillo
Azucar
Vicuña Mackenna
Barrancas Blancas
Pta. Plata
Pta. Arenas
Tocopilla
Sta. Isabel
Gatico
Cobija
Mejillones
Baquedano
Agua Santa
Varillas
Avanzada
Domeyko
Paposo
Pta. Lobos
Pta. Aguja
Quillagua
Punta Alto
Chiguana
Vol. Ollague
Calate
Pta. Negra
Huara
Pica
Huatacondo
Patillos
Laguna
Iquique
La Noria
Junin
Buena
Zapiga
Tarapaca
Lirca
Rio Mulato
Rio Loa
Turco
Huasco
Freirina
Vallenar
Mangabeso
Carrizal Alto
Carrizal Bajo
Chañaral
Pueblo Hundido
Inca
Caldera
Copiapo
Toled

PARAGUAY
PARANÁ
SÃO PAULO
URUGUAY
SANTA CATHARINA
RIO GRANDE DO SUL
MISIONES
ORIENTES
Asunción
São Paulo
Montevideo
Porto Alegre
Florianopolis (Desterro)
Rio Grande do Sul
Pto. Rooseveldt
Pto. Pacheco (Bahia Negra)
Fuerte Olimpo
Pto. Murtinho
Pto. Casado
Pto. Max
Pto. Tibiriça
Concepcion
Horqueta
Pto. Xavier da Silva
Villarica
Caazapá
Encarnacion
Posadas
Villa Encarnacion
Pto. Piray
S. Pedro
Monte Caseros
Alto Uruguay
Colonia Xingu
Palmeira
Passo Fundo
Cruz Alta
Alvear
Mercedes
Paso de los Libres
Uruguayana
Quaraby
Salto
Tambores
Paysandú
Mercedes
Florida
Durazno
Colonia
Mal Abrigo
Pta. Piedras
Chacomus
Port Argentine
Samborombón Bay
Dolores
General Guido
C. San Antonio
Juancho
Mar Chiquita
Mar del Plata
C. Corrientes
Miramar
Pta. del Este
Rio de la Plata (R.)
La Plata (R.)
Sta. Victoria do Palmar
Chuy
Pto. Atlantica (Coronilla)
C. Polonio
C. Paloma
C. Sta. Maria
Maldonado
Rocha
Sant'Anna do Paranahyba
Uberaba
Araxá
Frutal
Barretos
Franca
Jupiá
Anhangahy
Araçatuba
Pennapolis
Jacutinga
Indiana
Salto Grande
Jacarezinho
Ribeirão Claro
S. Pedro
S. Jeronymo
Thomazina
Jaguaryahyva
Lages
Tibagy
Castro
Ponta Grossa
Curityba
Campo Largo
Palmeira
Prudentopolis
Guarapuava
Tupy
Trium pho
Lapa
Dorizon
Rio Negro
Mangueirinha
Tucarupucú
Iguassú
Azara
Cruz Machado
Cleveladia
Palmas
União da Victoria
Xanxere
Rio Bonito
Canoinhas
São Bento
Porto União
Joinville
Blumenau
Itajahy
Camboriú
Brusque
Biguassú
São José
Palhoça
Garopaba
Imbituba
Laguna
Tubarão
Araranguá
Torres
Lauro Müller
Imaruhy
Passo Fundo
Lagôa Vermelha
Alfredo Chaves
Vaccaria
Antonio Prado
Soledade
Bento Gonçalves
Caxias
Carlos Barbosa
São Sebastião do Caby
Taquara
Nove Hamburgo
São Leopoldina
Gravatahy
Conceição do Arroio
Rio Pardo
Triumpho
Cachoeira
Sta. Maria
São Gabriel
Cacapava
Lavras
Encruzilhada
São João de Camaquam
São Lourenço
Rio Pedrito
Bagé
Pelotas
São José do Norte
Villa Sequeira
Beira Mar
Piratiny
Ribôca
Arroio Grande
Jaguarão
Serro Largo
Cerro Chato
Harval
Melo
Artigas
Cerro Largo
Tacuarembó
Rivera
Santa Anna
Trabuquera
Corrales
San Eugenio
Ibare
Yaguarón
Rio Branco
Nioac
Bella Vista
Ponta Porã
Amambahy
Iguatemy
Sa. do Paquery
Sa. de Maracaju
Sa. de Caninde
Sa. Geral
Sa. do Mar
Serra do Mar
Serra Negra
Serra Geral
Serra de Botucatú
Serra de Paranapiacaba
Serra de Itaqueri
Serra de Jaboticabal
Serra de Araraquara
Serra de Ibitinga
Serra de Jahu
Serra de Agudos
Serra de Bauru
Serra de Avanhandava
Serra de Araçatuba
Serra de Tres Lagoas
Serra de Anhandahy
Serra de Aguapehy
Serra de Vaccaria
Serra de Amambahy
Serra de Maracaju
Serra de Caninde
Serra de Iguatemy
Serra de Paquery



ATLANTIC OCEAN
Tropic of Capricorn
Rio de Janeiro
Victoria
Espirito Santo
Santa Cruz
Campos
Macahé
Petropolis
Cabo Frio
Victheroy
Paraty
Ubatuba
Caribbean Sea
Pta. Gallinas
TRINIDAD
Delta of the Orinoco
Orinoco
VENEZUELA
COLOMBIA
GUIANA
Guiana Highlands
Mouths of the Amazon
ILHA DE MARAJO
Equator
Yapura
Negro
Amazon
Tocantins
Para
C. de São Roque

ECONOMIC MAP OF
SOUTH AMERICA
Scale of Miles
KEY TO COLORING
Rubber
Cattle and Hides
Coffee
Nitrate of Soda
Silver
Cocoa
Mutton and Wool
Sugar
Other Products named in Black
MINERALS
Silver
Copper
Gold
Iron
Tin
Platinum
Diamonds
CARIBBEAN SEA
ATLANTIC OCEAN
PACIFIC OCEAN
COLOMBIA
ECUADOR
BRAZIL
BOLIVIA
PARAGUAY
URUGUAY
ARGENTINA
CHILE
Barranquilla
Pearls
Asphalt
Georgetown
Paramaribo
Cayenne
Buenaventura
Quito
Guayaquil
Guano
Cotton
Callao
Lima
Hardwood
Nuts
Equator
Maranhão
Tobacco
Pernambuco
Bahia
Manganese
Cabinet Woods
Cotton
Rio de Janeiro
Santos
La Paz
Wolfram
Bismuth
Sucre
Petroleum
Tropic of Capricorn
Antofagasta
Borax
Asunción
Flax
Valparaiso
Santiago
Buenos Aires
Montevideo
Wheat
Coal
Salt
Fisheries
Strait of Magellan
Cape Horn
FALKLAND ISLANDS
SOUTH GEORGIA I.
JUAN FERNANDEZ IS.
Longitude 60° West from 50° Greenwich
100°
95°
90°
85°
80°
K
L
M
N
O
1

LA PAMPA

BUENOS AIRES

NEUQUEN TERRITORY

RIO NEGRO TERRITORY

CHUBUT TERRITORY

SANTA CRUZ TERRITORY

TIERRA DEL FUEGO

Bahia Blanca

Mar del Plata

Necochea

Carmen de Patagones

Viedma

San Antonio

Pringles

Rio Colorado

Choele-Choel

Cipolletti

Neuquen

Zapala

Chos Malal

Cutral Co

Plaza Huincul

Rincon de los Andes

San Martin de los Andes

Junin de los Andes

Villa La Angostura

Bariloche

Los Menucos

Maquinchao

Huanuluan

Valcheta

Sierra Grande

Golfo de San Matias

Pta. Norte

Pto. Piramides

S. Jose or Valdez Peninsula

Pto. Madryn

Pta. Delgada

Pta. Ninfas

Rawson

Pta. Castro

Trelew

Gaiman

Comodoro Rivadavia

Gulf of St. George (Golfo de San Jorge)

Pta. Mata Linares

Cabo Raso

Camarones Bay

C. Dos Bahias

Caleta Olivia

Pto. Deseado (Pto. Desire)

Pta. Sereno

Pta. Mirabian

C. Dañoso

Pta. Desengaño

San Julián

Rio Chico

Santa Cruz

Pta. Shingle

Pto. Santa Cruz

Bahia Grande

Coronel Estancia Smith

Johnson

C. Buen Tiempo Fairweather

Gallegos

Pta. Loyola

Estancia Biatch

C. Virgenes

Strait of Magellan (Estrecho de Magallanes)

C. Espiritu Santo

Pta. de Arenas

Punta Arenas

San Sebastián Bay

C. San Sebastián

Salesiana

Pto. Brown

C. San Diego

Staten I. (I. de los Estados)

Cape Horn (C. de Hornos)

Pto. Militar

Sayus

Villa Iris

Darregueira

Guaminí

Olavarria

Azul

Tandil

Balcarce

Juancho

Mar Chiquita

Miramar

C. Corrientes

Tres Arroyos

Coronel Suarez

Pringles

Lopez

Juarez

Remeco

Saavedra

Hucal

Abramo

Dorila

Carhué

Cerales

Rivera

Maza

Toay

Sta. Rosa

General Acha

Chelforo

Rio Negro

Cabo Aldrecon

Colorado

El Coy

Negro Muerto

Conesa

Darwin

Choele-Choel

Alsina

Villarino

Bahia Blanca

Ingeniero Jacobacci

Maquinchao

Los Menucos

Valcheta

Viedma

Carmen de Patagones

Pta. Rubia

Pta. Gama

I. Riacho

Pta. Main

Golfo de San Matias

Pta. Sierra

Pto. Piramides

Pto. Madryn

Trelew

Gaiman

Rawson

Pta. Castro

Comodoro Rivadavia

Gulf of St. George (Golfo de San Jorge)

Pta. Mata Linares

Cabo Raso

Camarones Bay

C. Dos Bahias

Pto. Deseado (Pto. Desire)

Pta. Sereno

Pta. Mirabian

C. Dañoso

Pta. Desengaño

San Julián

Rio Chico

Santa Cruz

Pta. Shingle

Pto. Santa Cruz

Bahia Grande

Coronel Estancia Smith

Johnson

C. Buen Tiempo Fairweather

Gallegos

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Strait of Magellan (Estrecho de Magallanes)

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Pta. de Arenas

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San Sebastián Bay

C. San Sebastián

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Staten I. (I. de los Estados)

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Sayus

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Balcarce

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C. Corrientes

Tres Arroyos

Coronel Suarez

Pringles

Lopez

Juarez

Remeco

Saavedra

Hucal

Abramo

Dorila

Carhué

Cerales

Rivera

Maza

Toay

Sta. Rosa

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Golfo de San Matias

Pta. Sierra

Pto. Piramides

Pto. Madryn

Trelew

Gaiman

Rawson

Pta. Castro

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Gulf of St. George (Golfo de San Jorge)

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Cabo Raso

Camarones Bay

C. Dos Bahias

Pto. Deseado (Pto. Desire)

Pta. Sereno

Pta. Mirabian

C. Dañoso

Pta. Desengaño

San Julián

Rio Chico

Santa Cruz

Pta. Shingle

Pto. Santa Cruz

Bahia Grande

Coronel Estancia Smith

Johnson

C. Buen Tiempo Fairweather

Gallegos

Pta. Loyola

Estancia Biatch

C. Virgenes

Strait of Magellan (Estrecho de Magallanes)

C. Espiritu Santo

Pta. de Arenas

Punta Arenas

San Sebastián Bay

C. San Sebastián

Salesiana

Pto. Brown

C. San Diego

Staten I. (I. de los Estados)

Cape Horn (C. de Hornos)

FALKLAND ISLANDS
(ISLAS MALVINAS)
(British)

Port Egmont

Port Salvador

Port Louis

Port Stanley

Port Fitzroy

Port Sterling

C. Meredith

Falkland Sound

Berkeley Sound

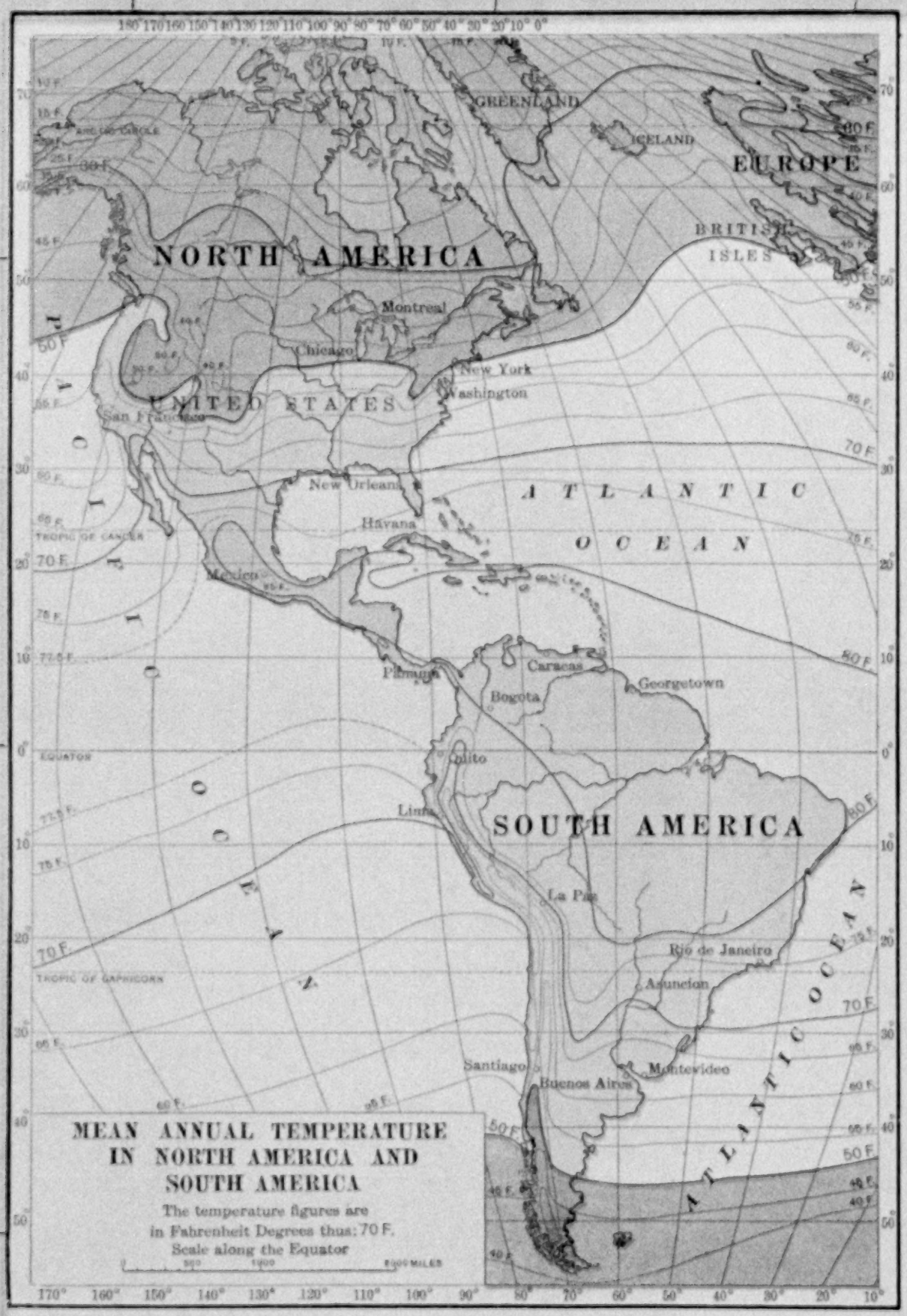
Port Harburo

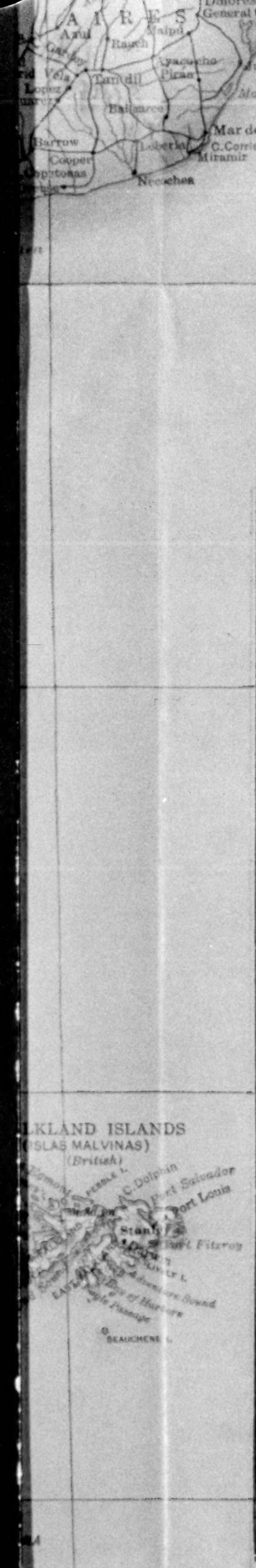
Beauchene I.

BOUNDARY CLAIMED BY CHILE

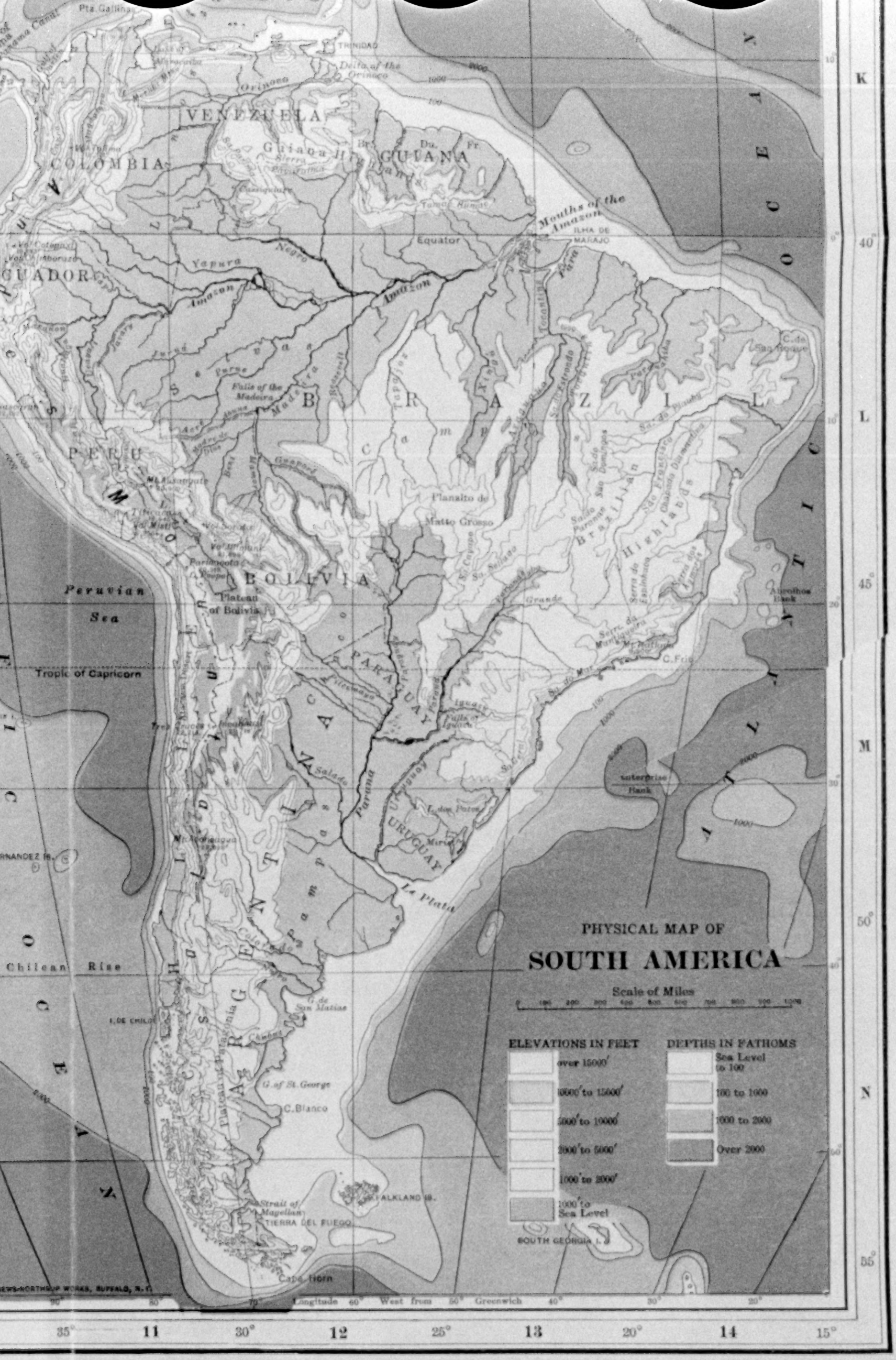
BOUNDARY CLAIMED BY ARGENTINA

70° 2 75° 3 70° 4 65° 5 60° Longitude 6 West





60° Longitude 6 West 55° from 7 Greenwich 50° 8 45° 9 40° 10


PHYSICAL MAP OF
SOUTH AMERICA
Scale of Miles
ELEVATIONS IN FEET
over 15000'
10000' to 15000'
5000' to 10000'
2000' to 5000'
1000' to 2000'
1000' to Sea Level
DEPTHS IN FATHOMS
Sea Level to 100
100 to 1000
1000 to 2000
Over 2000
VENEZUELA
COLOMBIA
GUIANA
GUADOR
PERU
BOLIVIA
PARAGUAY
URUGUAY
BRAZIL
Mouths of the Amazon
ILHA DE MARAJO
Equator
Amazon
Negro
Yapura
Falls of the Madeira
Planalto de Matto Grosso
Brazilian Highlands
Plateau of Bolivia
Peruvian Sea
Tropic of Capricorn
Chilean Rise
Paraná
Salado
Pampas
Le Plata
Colorado
G. de San Matias
G. of St. George
C. Blanco
Strait of Magellan
TIERRA DEL FUEGO
FALKLAND IS.
Cape Horn
Enterprise Bank
Abrolhos Bank
C. Frio
SOUTH GEORGIA I.
Longitude West from Greenwich
35° 11 30° 12 25° 13 20° 14 15°
K L M N
40° 45° 50° 55°

X

BUENOS AIRES AND ITS RIVER OF SILVER

A Journey Up the Paraná and Paraguay to the Chaco Cattle Country

By William R. Barbour

AS YOUR ship, at the end of its seven-thousand-mile journey from New York, breasts the current of the majestic Rio de la Plata, and the white buildings of Buenos Aires appear low in the west before you, you are, perhaps, disappointed especially so if you have stopped en route at Rio de Janeiro and been privileged to view its fairy-like setting, with the mountains girt about it and the blue Atlantic laving its curving shore-line.

Like a person of retiring nature, whom you must know long and well to appreciate, Buenos Aires reveals itself little by little to you and twines itself about your heart, till ere long, and so gradually that you have not realized it, its subtle charm has made a lasting conquest.

Your first view shows great white grain elevators in rows along the shore, with one skyscraper of fourteen stories looming up behind them. The great size of the city is not evident, for the land is flat and the warehouses and office buildings close to the busy docks hide all that lies behind.

A CITY WITH NO SLUMS

Nearly every traveler is impressed first of all by the cleanliness of the capital of the Argentine Republic. The industries of the city are confined largely to port activities and trading. Partly for this reason and partly because Argentina has no coal, and hence cannot manufacture cheaply, hideous chimneys and smoke-grimed factories are not numerous. There are no slums. Naturally, there are districts of poverty, but the tenement, as we know it, does not exist. In even the poorest quarters, such as the *"Boca,"* the streets are clean and well paved, and the houses, only one or two stories high, all have *patios* behind them. The houses are tinted cream white or yellowish tan and face directly on the streets, with blank or nearly blank walls.

One drawback to the older part of the city is the narrowness of the streets, and especially the sidewalks, which are often three feet or less from wall to curb. There is no excuse for this, for when the city was laid out, the whole vast expanse of the pampas lay open behind it. The newer streets are much wider, often with a ribbon of shrubbery and grass down the center.

Buenos Aires is roughly circular in shape and of immense size, covering some seventy-five square miles. Two of its sides are formed by the Rio de la Plata (so wide that it seems like a muddy sea) and a small stream, the Riachuelo. Along both of these, but principally the former, are the numerous docks, basins, and warehouses. Avenida Rivadavia, starting at the waterfront and running almost due west, divides the city into two roughly equal portions.

Over the greater part of the city the streets intersect at right angles, and it would be a very easy place in which to find one's way around were it not for the fact that the streets are all named instead of numbered, most of the names being historical or geographical. Every country in the world has a street named for it, and every Argentine president, general, or other important personage. Another habit is to name streets for dates, of which there are several roughly corresponding to our Fourth of July. Thus there are Avenida de Mayo, Calle 25 de Mayo, Paseo de Julio, and Parque de las Tres de Febrero.

AVENIDA DE MAYO, THE CHIEF ARTERY OF THE CITY

Much of the city is uninteresting, consisting of block after block of low plaster-covered brick buildings and innumerable small *almacenes* (groceries), *cervecerías* (beer saloons), *cafés* (coffee-houses; here a café is not a restaurant, as in United States), *cigarrerías*, and *loterías* (shops where lottery tickets are sold).

XUM

Photograph by Publishers' Photo Service

ARGENTINA'S MAGNIFICENT CAPITOL, FACING CONGRESS SQUARE

In general outline the stately structure resembles the United States Capitol at Washington. To support the lofty dome, which weighs 30,000 tons, it was necessary to construct an inverted cupola of stone for the foundation. Viewed from above, this cupola resembles a gigantic half of an eggshell.

The chief artery of the city is Avenida de Mayo, stretching from the President's home to the Capitol. The Casa Rosada (Pink House), corresponding to our White House, is a great pink pile, with imposing entrances and handsome carvings and bas-reliefs. It faces the Plaza de Mayo, where on May 25, 1810, Argentine independence was first proclaimed.

This avenue, under which the subway runs, is lined with hotels and fine shops and has many cafés with little tables out on the sidewalk under awnings, *à la Paris*.

Another interesting thoroughfare is Calle Florida, the street of restaurants and jewelry stores. It is so narrow that there is barely room for two cars to pass, and in the late afternoon all traffic is stopped, so that the people may promenade in the street.

Nearly all stores and business houses take a respite in the late afternoon, the Spanish for black coffee and the English for tea.

Buenos Aires was founded in 1580, after colonization efforts in 1534 and 1542 had failed. From the first it had to fight against apathy and even open hostility on the part of the Spanish rulers.

For generations regulations were in force preventing direct commerce between Buenos Aires and Spain, so that goods had to be shipped overland across the Andes, through Bolivia and Peru, thence by vessel to Panama, and transferred across the Isthmus.

Thus handicapped, it is no wonder that the port grew slowly. It was not till the last half century before the Spanish yoke was thrown off that Buenos Aires began to come into its own. Once independence was achieved, it grew rapidly, and when in 1910 the hundredth anniversary was celebrated, it had a population well over a million.

THE GIFTS OF THE NATIONS TO BUENOS AIRES

Much of the city's beauty dates from this centenary in 1910, at which time many countries presented Argentina with commemorative statuary symbolic of the occasion. As is fitting, the gift of the Spanish people is the most conspicuous. In the center of the broad Avenida Alvear, the city's loveliest promenade, rises a great white marble pedestal, crowned with an angel of victory. Below are many other figures and friezes, while the four corners of the pedestal bear bronze groups symbolizing the Andes, the Pampas, the Chaco, and the Mesopotamian region (between the Paraná and Uruguay rivers).

France's contribution is among the finest and also stands beside the Avenida Alvear. It is of rose-colored granite and white marble, with exquisitely carved figures.

America's gift is not in keeping with her importance, and, standing in a rather obscure corner of one of the parks, is missed by many tourists. It is a bronze life-size figure of George Washington on a severely plain pedestal of pink Vermont granite.

The English commemorated the occasion by the gift of a great red brick clock-tower, in the center of the beautiful Plaza Britannica, opposite the Retiro Railway Station. Germany's gift was a broad white marble fountain; while Italy, in the Plaza Italia, has a large equestrian statue of Garibaldi.

Throughout Argentina, in every city and in many towns, may be seen equestrian statues of San Martin, Argentina's greatest national hero. Among the best is the one in the center of the Plaza San Martin, with bronze battle groups and bas-reliefs, in an excellent setting of palms and formal flower beds.

BELGRANO SUBURBS LIKE A BIT OF ENGLAND

All about the city are suburbs, with which there is good communication by the frequent suburban trains. Of these residential districts Belgrano lies closest and is the best known. It is especially popular among the many British residents, and in some portions, were it not for the Spanish street signs, one might imagine himself set down in England. On one corner is a boys' boarding school, and in the open lot behind it English lads in "shorts"—their Eton jackets and broad white collars laid aside—are engrossed in cricket or football. On another corner is an ivy-clad Episcopalian or Presbyterian church, a bevy of pretty English girls chatting on the steps. Even

XUM

Photograph by Publishers' Photo Service

A CLOSER VIEW OF ARGENTINA'S CAPITOL BUILDING (SEE ALSO PAGE 394)

The Senate and Chamber of Deputies have held their sessions in its halls since 1906.

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THE PRINCIPAL THOROUGHFARE OF BUENOS AIRES IS THE AVENIDA DE MAYO

This handsome street extends from the Plaza de Mayo, on which is located the presidential residence, to Congress Square (see page 395). It ranks among the finest boulevards in the world.

the native policeman greets you, "Good morning, sir," instead of *"Buenos Dias, Señor."*

The city with its suburbs has nearly two million inhabitants, almost one-fourth the population of the country. It is the third largest city in the New World and the second Latin city in the whole world. It is sometimes called "The Paris of the New World" and sometimes "The New York of South America." In beauty of buildings and parks, the first name undoubtedly is descriptive, and in financial and commercial importance the second is equally so.

Another resemblance to New York is in its cosmopolitanism. In nearly any popular restaurant one may hear diners chatting in Spanish, French, Italian, German, and English; perhaps also in Russian, Swedish, or Portuguese.

A CITY OF OPPORTUNITY FOR THE IMMIGRANT

Like New York, it is a city of opportunity for the immigrant. Many of the largest businesses are owned by foreigners who landed with their belongings on their backs. Señor Mihanovich came to Argentina a penniless Austrian some forty

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POWERFUL CRANES LINE THE DOCKS OF BUENOS AIRES

The great river port's waterfront, extending for miles, is admirably equipped with the most modern loading and unloading mechanism, but the silt brought down by the Rio de la Plata is a perpetual problem to harbor engineers.

years ago and worked for thirty cents a day. With his savings he bought a rowboat, and ferried passengers across the *Boca*, or "mouth," of the Riachuelo. When he died, a few years ago, he was the owner of some two hundred and fifty vessels, plying all the rivers of the country, and his fortune was valued at many millions of *pesos*.

In no other country except the United States do foreigners so soon become assimilated. Generally speaking, there are no foreign quarters. True, Italians are numerous in the city of Rosario and in the wine belt around Mendoza; Germans have settled largely in the province of Santa Fé and the Welsh in Patagonia; but the second generation is Argentine, heart and soul and language.

Only the English are exceptions to this rule. They keep their mother tongue and customs generation after generation. Thousands of them, whose families had been in the country for generations and whose Spanish was no less fluent than their English, flocked home to fight in 1914. Many of them had never seen England, nor had their fathers before them.

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A VIEW OF THE SHIPPING AND DOCKS OF BUENOS AIRES FROM THE CUSTOM-HOUSE TOWER

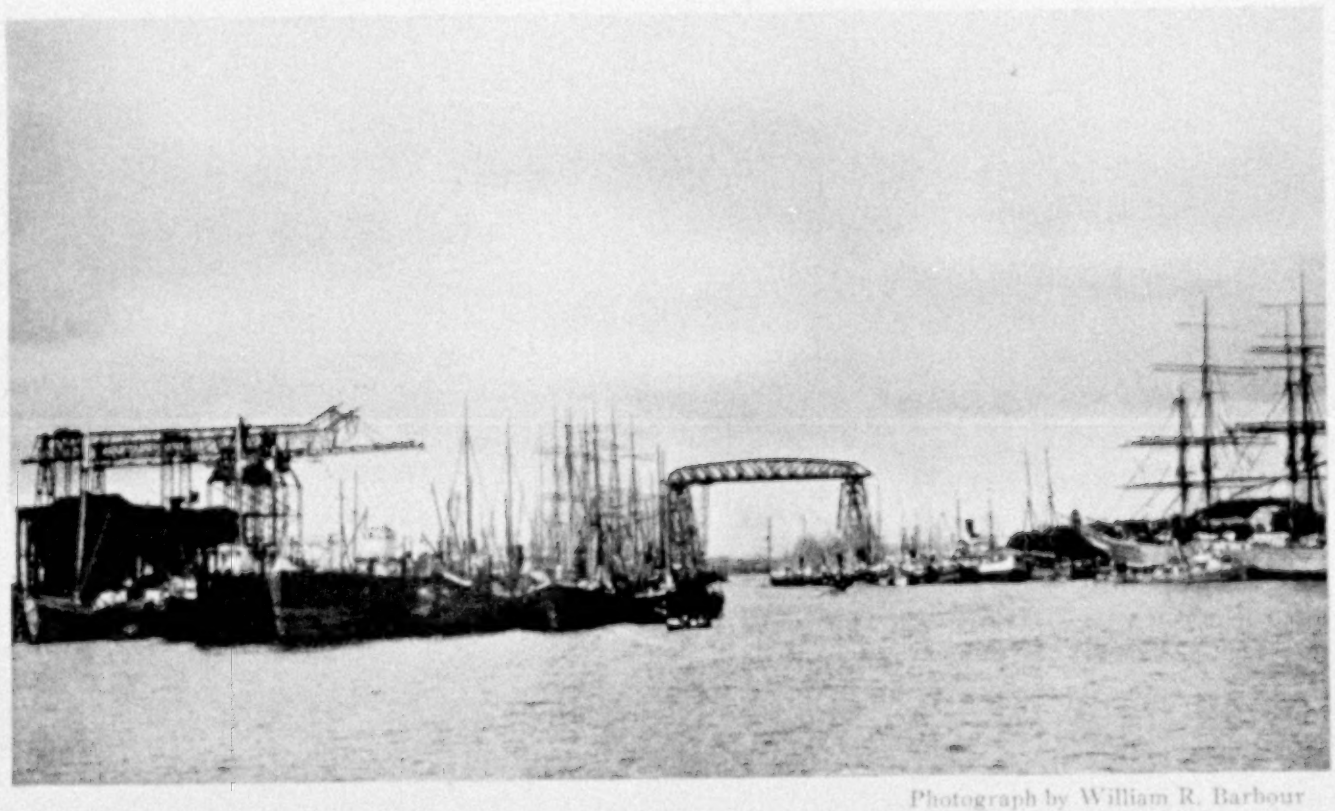
The streets leading to and along the harbor front, of unusual width to accommodate the immense volume of traffic, are cut with the tracks of the great railways of Argentina and with the spur-tracks by which they connect with the little railroad that traverses almost every nook and corner of the vast dockage and warehousing space.

While Buenos Aires is thought of as a Spanish city, true Spaniards are not in a majority.

The capital of Argentina is preëminently a city of wealth and pleasure. Unlike wealthy Americans, who have their places of business in the city, but live in the country, many of the richest land-owners, who number their acres by the tens of thousands, have their palatial homes in the heart of Buenos Aires and only at infrequent intervals visit their immense ranches, which are managed by overseers.

A PARADISE FOR THE GOURMET

Buenos Aires is *the* city for the gourmet. No matter what one's taste or nationality, there is a restaurant made to his order.



Photograph by William R. Barbour

CONGESTED SHIPPING IN THE HARBOR OF THE CITY OF "GOOD AIRS"

Although Argentina has only a little more than one-seventh the total area of South America, it possesses more than two-fifths of the total railway mileage of the continent. Most of the lines are concentrated in the three provinces of Buenos Aires, Entre Rios, and Córdoba (see The Map of South America supplement in this number).

Are you a Frenchman, loving the delicate entrées, the dainty trifles of the menu? *Voilà!* there is the Petit Salon.

Do you, as an Englishman, crave the "roast beef of Old England," beefsteak and kidney pies, musty ale, and such dishes of your home land? You have only to visit one of the excellent English restaurants, where the bill of fare is printed in parallel columns, English and Spanish.

Only the American will miss his boyhood dishes, for nowhere will he find baked pork and beans, griddle cakes, or American pie. Ice cream is beginning to be popular, but, in spite of the excellent ingredients used, is not like the product of the States.

A DINNER AT EDUARD'S

There are big restaurants, gilded and bedecked, with imposing orchestras and all the life and sparkle of a Broadway establishment before the drought. And, for those who can find them, there are unassuming places tucked away on side streets, where one may dine quietly, without music or ceremony, and experience the joys of the true epicure. Let us assume that we are of the Fortunati, and after a long walk through the gay night streets find a table at Eduard's.

The room is small, with perhaps a dozen small tables and only three or four waiters. As we enter, on our left is a glowing fire before which sundry plump fowls are roasting, whose odor is in itself an appetizer. The *lista de platas* handed us by a silent waiter contains scarce half a page of dishes.

If we wish, we may begin with a San Martin cocktail, named after the liberator of Argentina and a credit to him.

Let us follow the native custom of beginning our meal with *fiambre*. A waiter brings a great tray laden with thin, cool cuts of meat—ham, breast of turkey, veal loaf, a dozen kinds. Let him pile your plate high. Whether it is the climate or the wonderful freshness and quality of the meat, you may eat as much as you want and still have your gustatory faculties unimpaired for the meal to follow.

We may have soup if we wish, and the Argentine soups, rich and delicious, served with grated cheese, are unalloyed perfection. But suppose we pass on to fish. No question there! *Filet de pejerrey,*

frito. *Pejerrey* signifies "king of fishes." No fish on earth can excel it in flaky white deliciousness.

Now for the main course. One of the fowls roasting before that glowing wood fire tempts us sorely, but we have a better treat in store and order full portions of *Tallarines à la Eduard*. *Tallarines* are a sort of macaroni, in flat strips instead of tubes. Eduard guards his secret well, but we detect in the delectable mixture brought us in a casserole steaming hot from the oven cubed breast of chicken, mushrooms, a piquant trace of cheese, a wonderful light-green cream sauce, and seasonings beyond our knowledge.

The portions are generous, all we can eat; for, as the waiter explains smilingly when in our broken Spanish we comment on the liberality, *"Es un costumbre de la casa, Señores."* We have no quarrel with such a custom of the house.

Photograph from Publishers' Photo Service

SPAIN'S GIFT TO HER FORMER COLONY

During the centenary celebration of Argentine independence this impressive pedestal, surmounted by an angel of Victory, was unveiled as a symbol of the Mother Country's good-will.

Perhaps with our meal we have chosen a bottle of *vino tinto*, that fine red wine from the sun-bathed slopes of the Andes. Then a trifle of salad, if you wish it, with only cheese—rich, crumbly cheese from Chubut, far down in Patagonia—to follow it, and a slice of that delicious quince confection, *dulce de membrillo*.

Black coffee, of course, and he who has not been to Latin America knows not what coffee may be when prepared by a race which has made it a national drink for centuries. If you want it, doubtless in some dusty corner of the wine cellar is tucked away a bottle of Chartreuse or Benedictine, golden and syrupy with age.

Not a pretentious meal? Perhaps not, but perfect in every detail, and one that will linger longer in your mind than many a more elaborate banquet.

NO GRAVES IN LARGE CEMETERY

On a Sunday or *fiesta* (religious holiday) it is interesting to visit one of the great cemeteries. Recoleta and Chacarita are the most famous. The former is the older and is no longer used for burials, except by a few families whose mausoleums are not yet filled. Though smaller, it has the more lovely setting. One enters it by a broad flight of white marble stairs flanked by lawns and flower

Photograph by F. Lamson Scribner

ARGENTINA'S HOME OF DRAMATIC ART: THE MUNICIPAL THEATER AT BUENOS AIRES

Built at a cost of two and a half million dollars, the Teatro Colón is chiefly devoted to Italian lyric opera during the winter season (from May to August). The world's greatest artists have sung in this theater, the late Enrico Caruso having been a prime favorite with the Argentines.

XUM

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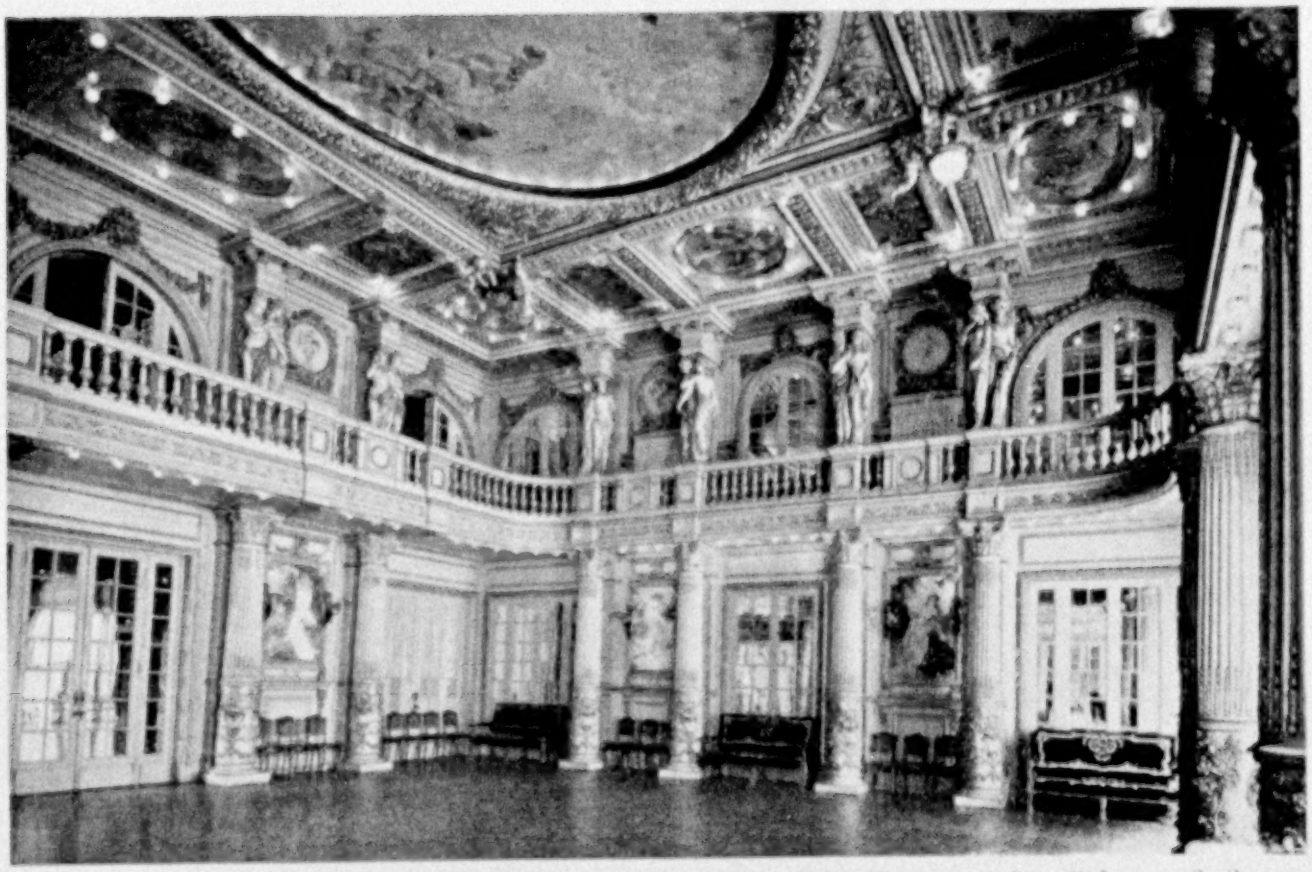
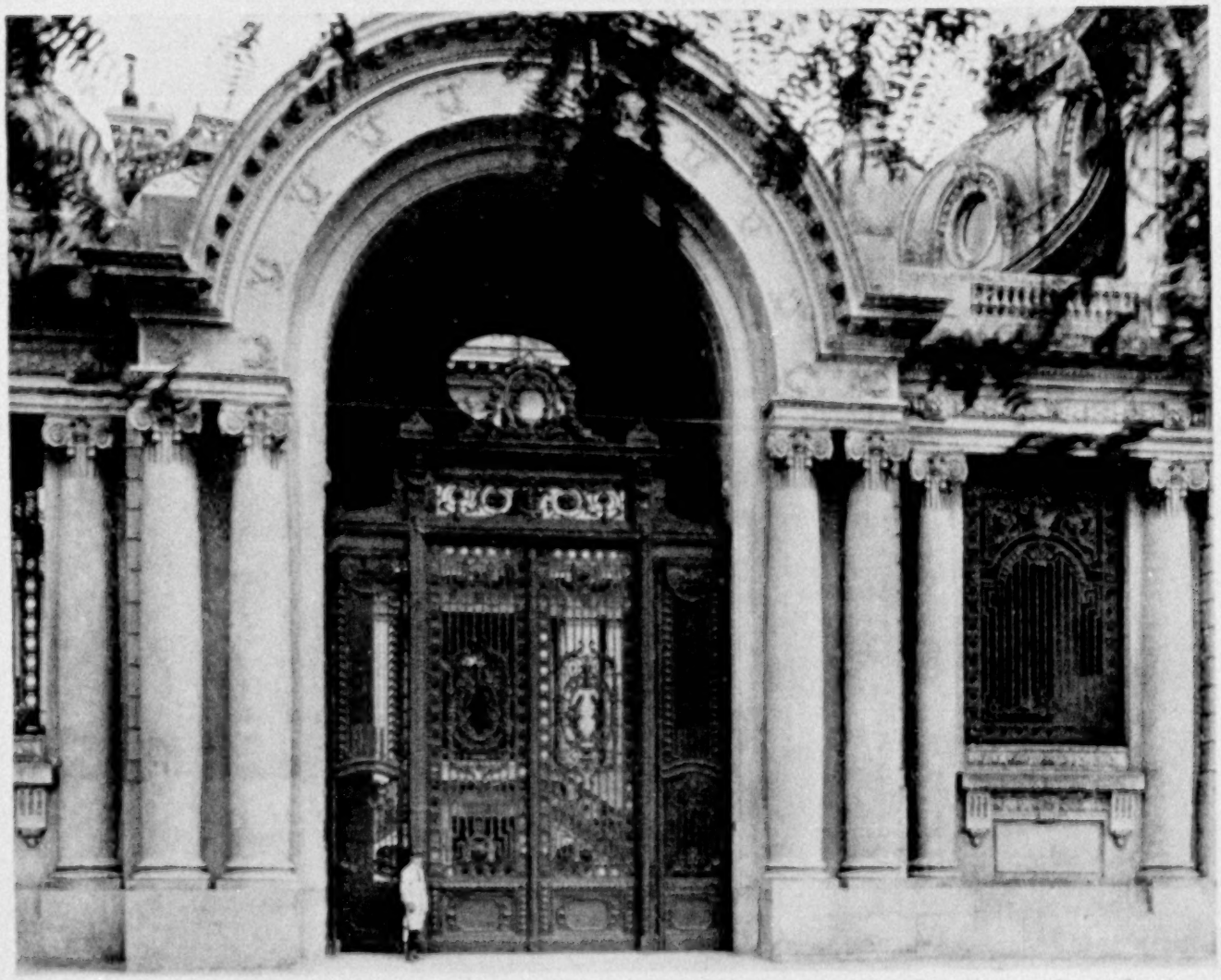
BUENOS AIRES HAS UTILIZED AN EXHIBITION PAVILION FOR ITS MUSEUM OF FINE ARTS

This is not the permanent home of the city's valuable collection of paintings and statuary, however. It was used to exhibit Argentina's products during the Paris Exhibition of 1889.



Photograph from F. Lamson Scribner

THE BALL-ROOM IN ONE OF BUENOS AIRES' FINEST HOTELS



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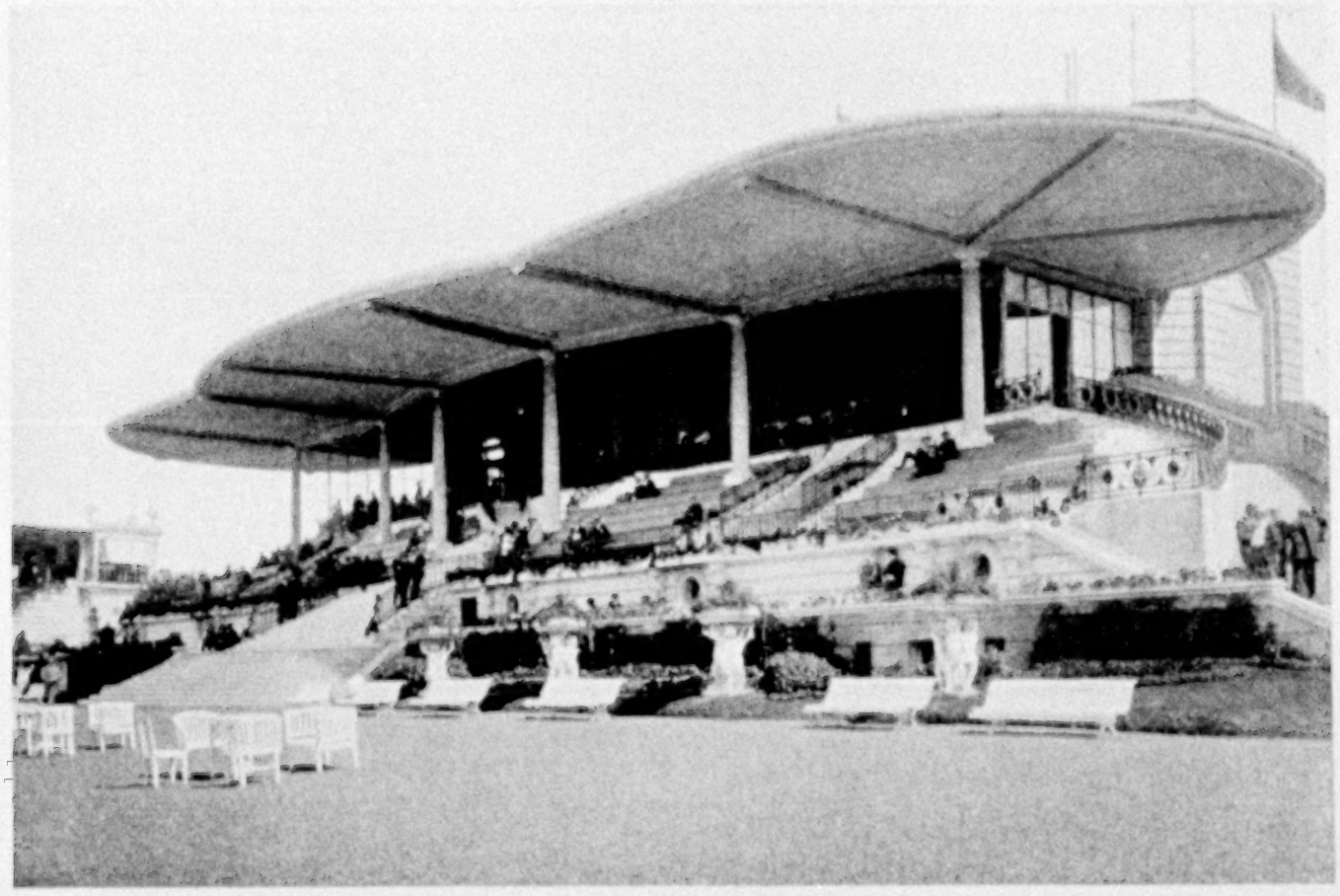
THE ENTRANCE TO A PRIVATE RESIDENCE IN BUENOS AIRES



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GRAND STAND OF THE JOCKEY CLUB, BUENOS AIRES' MOST FAMOUS SPORTING ORGANIZATION

The horse-races of the Palermo Hippodrome, as the track is called, are held all the year round, but the most important events are scheduled from April to November.

beds. Visitors are forbidden to take photographs there.

The Chacarita Cemetery is much larger than Recoleta, but arranged on the same lines. As in New Orleans, graves are not used, but all burials are in mausoleums above ground. Many of these are very beautiful, with carved angels, massive marble walls, and glass doors protected by ornamental ironwork.

Usually the doors are locked, but are opened on holy days, when relatives spend long hours with their loved departed ones, and in every mausoleum one may see black-clad women seated on low chairs or kneeling on stools, telling their beads and tending the waxen tapers and incense lamps.

The coffins are arranged upon shelves, tier on tier, covered with lovely hand-made lace draperies and usually piled high with flowers.

Up and down the narrow streets, between the houses of the dead, stroll many people, and the scene, while not lacking in solemnity, has none of the melancholy of our cemeteries. It seems as if the Argentines keep in closer touch with their dead than they could if they were buried in the dark ground. This impression is heightened by the architecture of the tombs, whose soaring angels and uplifted crosses speak of hope and of faith in future reunions.

PHILADELPHIAN BECAME ARGENTINE HERO

Two or three hours in the Historical Museum are well worth while. It is filled with mementos of the various famous men of the republic, such as San Martin, Belgrano, Rosas, and Lavalle. There are old uniforms, weapons, and pictures galore, emblazoned battle flags taken in the wars with Paraguay, cannons captured from the British, and other relics.

Public life must have had its disadvantages, judging from numerous pictures labeled "Last moments of General Blank" or "Execution of General Blank."

One may also see "Uniform worn by

Photograph by F. Lamson Scribner

THE BUENOS AIRES ANNUAL CATTLE SHOW RIVALS THE FASHIONABLE HORSE SHOW OF NEW YORK

The wealth of Argentina is founded on live stock and wheat. This is the stock-reviewing stand of the Argentina Rural Society, devoted to the development of agricultural and pastoral interests of the country. It organizes annual exhibitions and fairs, where the best products are displayed.

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THE PALACE OF JUSTICE IN BUENOS AIRES

In the main auditorium of this impressive building, dedicated to Argentina's law courts, the Fourth Pan American Conference was held. Across the plaza is the Municipal Theater (see page 402).

Photograph by F. Lamson Scribner

A SEA OF MAUSOLEUMS: THE RECOLETA CEMETERY, BUENOS AIRES

For the beauty of its monuments and vaults, this city of the dead is said to be second only to the cemetery at Milan. Here are the last resting places of Argentina's most noted men (see text, page 401).

President Blank the day he was assassinated" and the "Dagger used by murderer of General Blank."

One perennially popular Argentine hero is Almirante (Admiral) Brown, a Philadelphian, who came to the country about 1800 and took command of the Argentine navy, waging a John Paul Jones type of warfare against the Spanish frigates.

A CITY OF PARKS AND PLAZAS

Buenos Aires is a city of parks and plazas. Seldom need one be out of sight of trees and fountains. The plaza may be of an acre or less, but it will have palms and other lovely trees, fountains, white statuary, and flowers in abundance. There are some sixty plazas occupying a block or more, not counting tiny breathing spots at street intersections, and fifteen great parks, of which at least three have areas of a square mile each.

Few places offer the gardener such coöperation in fertility of soil and temperate climate. Where else may one find palms and pines, guavas and geraniums, cypresses and cedars, oaks and oleanders, growing side by side and each attaining its maximum development?

Geraniums climb fifteen feet or more; sweet peas nod over ten-foot walls; roses bloom both in spring and in fall.

Only a few plants from the hottest portions of the tropics (such as Victoria regia water-lilies) need coddling, while spruces, firs, and birches from the colder parts of the earth thrive amazingly. The eucalyptus from far-off Australia does well, but no better than the American white pine, Canary Island palm, and English oak.

It is in Palermo, that belt of parks and gardens along the shores of the Plata, in the northern part of the city, that many of the finest scenic effects may be found.

Here is located the huge Parque de las Tres de Febrero (Park of the Third of February), with its lagoons, shaded bridle-paths, and winding driveways. In this park is the famous Rosery, where, in the space of a few acres, have been brought together over five thousand named species of roses.

One enters the Rosery by a rustic bridge across a lovely arm of the park lake and finds himself in an immense garden laid out in blocks like a city, with wide paths for streets. At frequent intervals are white benches and everywhere roses—white, pink, red, yellow, single and double, large and small; roses whose sturdy stems are like small trees; climbing roses clustering over pergolas and arbors; beds of rare dwarf roses; white statuettes half concealed in masses of bloom.

The garden's charm is not at its least at night, when the white-globed lights blend with the moon to lend the illusion of fairyland.

In Palermo are also found the Jardin Botánico and the Jardin Zoológico. The former stands as an everlasting memorial to its designer and first director, Carlos Thays.

This landscape architect, a native of Paris, began his work in Buenos Aires in 1891 and continued it for over twenty years. He journeyed through the length and breadth of the republic, noting and collecting hitherto-unknown flora to form the basis of the garden. He was consulted by the municipalities of Montevideo, Santiago, Valparaiso, and Rio de Janeiro, and aided nearly all the cities of Argentina in landscape-gardening projects.

His work in the Buenos Aires Jardin Botánico has been worthily carried forward by his successors, until today the garden stands as a finished jewel of verdure and bloom.

Each of the provinces and territories of Argentina, as well as the countries of Brazil, Chile, Uruguay, and Paraguay, and regions of Europe, Asia, Oceania, Africa, and North America, has a section dedicated to its peculiar flora. In the North American section may be found white pine, yellow poplar, various maples, ash, birch, etc. The section tends to make the American visitor homesick, and the trees themselves look lonesome, with so many strangers of the plant kingdom all around.

Another portion of the garden has thousands of specimens arranged by family—Rosaceæ, Leguminosæ, etc. Still another section has plants grouped by their uses—*i. e.*, tanning, dye, medicinal, oleaginous, poisonous, and textile.

Two of the loveliest spots in the garden are the Jardin Francés and the Jardin

XUM

Photograph by Newton W. Gufick

THE CATHEDRAL OF BUENOS AIRES RESEMBLES THE MADELEINE OF PARIS

But the rows of electric lights entwining the twelve Corinthian columns impress the traveler from the north as a somewhat bizarre decoration. San Martín, the statesman and soldier, who was primarily responsible for the independence of Argentina, Chile, and Peru, lies buried within.

Romano. The former represents a formal French garden, with its clipped box hedges, geometrical flower beds, statues, and massive marble urns. The Roman garden has statues of Pliny and of the Roman wolf and vegetation and settings distinctively Italian.

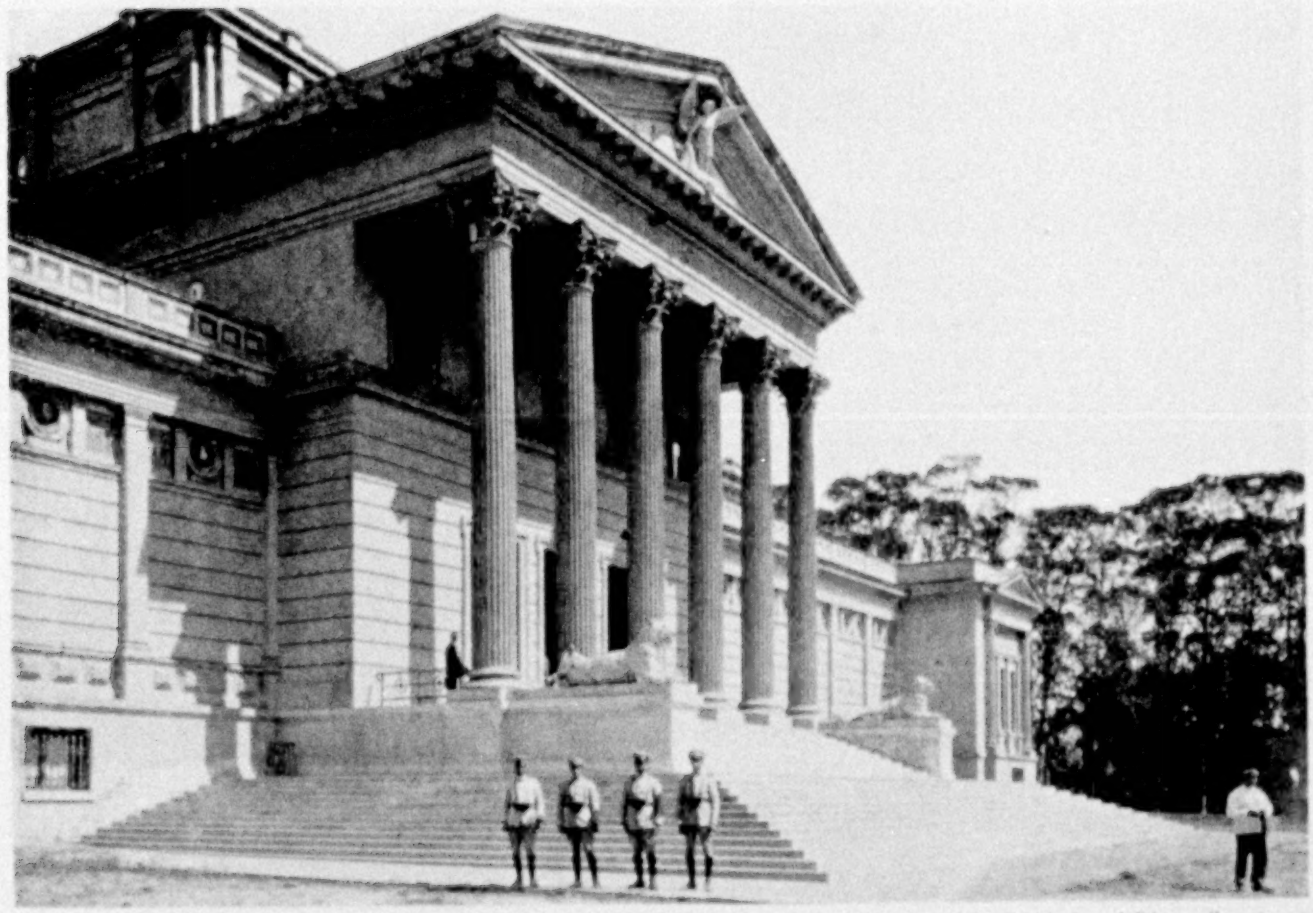
The Argentine trees are puzzling to the American visitor, as most of them have no counterparts at home. There are a few beeches, walnuts, etc., which are easily recognized, but the majority have no close relatives in continental United States. The names of the trees are not, in the main, Spanish, but Guaraní Indian, such as *timbó, ombú, jacarandá,* or *ibarapitá* (most Guaraní names are accented on their last syllables).

Generally speaking, the trees are hardwoods—though there are a few cone-bearers—and make very heavy, durable lumber, usually of attractive color and susceptible of taking a high polish. Most of them are not used to any great extent except locally.

Many native species have wonderful flowers. In spring the *timbó* trees are covered with masses of brilliant vermilion blossoms, and the *tipas* with clusters the shape and color of wisteria. Later the *palo borracho* is covered with pink and yellow lilies.

The Zoölogical Garden, which adjoins the Botanical Garden, is of more interest from its beauty of setting than from its collections. In the past few years the animals have suffered from *aftosa*, the foot and mouth disease, which has been prevalent in Argentina, and many of the cages are empty.

Especially to be noted are the birds, which are so tame that they wander about the lawns and groves entirely at will. On a sunny afternoon the Zoo is well worth visiting, if only to see the people. Nurse-maids with their charges, school children, elderly ladies, people of every class and caste, stroll leisurely along the shady paths, rest on the benches, take tea in the pavilion, or promenade past the grand-stand, where a municipal band plays classical and patriotic music.



Photograph by Publishers' Photo Service

THE MUSEUM OF THE MODERN CITY OF LA PLATA: ARGENTINA

La Plata was founded 39 years ago as the capital of the Province of Buenos Aires when the latter was separated from the national capital. It is admirably planned, with broad avenues cut by diagonal boulevards, somewhat after the style of Washington, D. C.

It is in such places as these, rather than at the races or the opera, that one sees the Argentines as they are, a courteous, proudly democratic, altogether likable people.

A VOYAGE UP THE WORLD'S SECOND LARGEST RIVER

Almost from the days of Columbus, the great waterway of the Rio de la Plata has been one of the most traveled trade routes of South America. Hardly had the Spanish explorers entered its estuary, in the early years of the sixteenth century, and founded the towns of Montevideo and Buenos Aires on its banks, before they pushed on up the river, seeking a passage which might lead them through to the Indian Ocean and the Isles of Spice.

The great stream, which in volume of water is second among the rivers of the earth, has for four hundred years been the main artery of traffic for Argentina, Uruguay, Paraguay, and southern Brazil, in spite of the fact that at least half of the territory it drains is only beginning to be developed and that a large percentage of it has never even been explored.

From Buenos Aires to Asunción, the picturesque old capital of Paraguay, an excellent line of river boats affords bi-weekly sailings, the time en route being four days upstream and three and a half days returning.

We left Buenos Aires one cool, showery morning in December (early summer) on the side-wheel, twelve-foot-draft steamer *Berna*, and after being out of sight of land for hours, in a turbid, muddy sea, reached the confluence of the Uruguay and Paraná rivers and turned northwest up the latter. The stream was miles wide, the color of coffee with cream, and broken by numberless marshy islands. The shores on the left were covered with plantations of poplar and willow.

A GLIMPSE OF ROSARIO, ARGENTINA'S SECOND CITY

Next morning we made our first stop at Rosario, the second largest city of Argentina and a notable shipping point

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A FAMILY GROUP IN A BUENOS AIRES PARK

The boy on the pony is the son of a millionaire ranch owner who makes his home in the national capital and leaves his cattle in the hands of overseer and gauchos.

for grain and flaxseed. It is located on high clay bluffs west of the river along whose banks there lie huge grain warehouses and elevators which cut off our view of the city proper, with its 250,000 people, a large part of whom are Italians. The water beside the Rosario docks is deep enough for ocean freighters, and the city serves as port of outlet for a great agricultural section.

In the afternoon we came to Diamante, lying east of the Paraná, in the rich province of Entre Rios. Here also there are warehouses close to the river, but most of the town lies farther back, above sixty-foot terraced clay cliffs. All this part of the river has alternate marshes and crumbling high clay banks.

About sunset, imposing white stuccoed church towers came into sight ahead, and rounding a great bend we came to Paraná, capital of the province of Entre Rios. It is a town upward of 50,000 people, and exports large amounts of hides and cereals; its wharves are equipped with traveling cranes and backed by solidly built concrete warehouses.

A wonderfully clear and balmy moonlight night followed. The river slipped quietly by, its ripples reflecting the winking lights of buoys which the Argentine Government has recently established as far as Corrientes.

Photograph by Newton W. Gulick

THE BALLOON-MAN IN BUENOS AIRES

He runs as fast as he can through the principal business streets with his inflated wares. On each balloon is the name of the largest retail dry-goods establishment of the city. He sells his balloons and at the same time advertises his employers.

FLOATING ISLANDS HARBOR HORDES OF SNAKES

When day came the character of the country had changed. On each side stretched endless reaches of low, partially inundated country, densely wooded with strange tropical trees, interspersed with an occasional "feather-duster" palm. The wide flood was dotted with islands, large and small, among which the buoyed channel meandered. *Camalotes*, which the Spanish dictionary defines as "river plants in South America resembling a floating island," began to drift by. Usually only a few would be joined together, but occasionally our boat would swing abruptly aside to avoid patches which had collected about some floating uprooted tree to form islands fifty feet across.

These *camalotes* make their appearance in times of high water, being carried out into the current from the adjacent swamps. They always harbor many snakes. In 1905 a great flood brought so many of these "islands" down the river that they stranded on the banks near Buenos Aires and thus constituted a public menace. Thousands of snakes, with an occasional wild boar or other animal which had become marooned, went ashore into the thickets between Palermo Park and the river, and a large force of policemen armed with machetes had to be put to work killing them.

A LAKE OF MYTHS AND LEGENDS

Just before noon we anchored offshore opposite the mouth of the Rio Corrientes, which flows in from the east, while a small tug delivered a few passengers from the small town of Esquina, whose orange groves and bright green fields showed in the middle distance.

The Rio Corrientes helps to drain the

Photograph by William R. Barbour

THE SON OF A PARAGUAYAN GAUCHO

Like his father, he is an adept at handling the flat-thonged *revenca*, the native whip, whose sharp voice is worse than its stroke.

mysterious Lake Iberá (Gran Laguna del Iberá), a great unexplored body of water in the interior of the province of Corrientes. The lonely recesses of this lake are rendered inaccessible by the floating vegetation, which covers the water and is said to form floating islands on which live tribes of Indians. All sorts of myths are current regarding the region and few inhabitants of the province are bold enough to enter it. It is a traditional haunt of evil spirits in the form of Indians whose feet have heels both before and behind! The Argentine Government is planning to have the lake explored by airplane.

During the second afternoon palms became more numerous and the forests still more tropical in aspect. One tall tree, with dense foliage and pale, almost white, bark was the *tala*, a cousin of our American hackberry. There were also many *ceiba* trees covered with orange-pink blossoms.

PASSING THE VAST, UNEXPLORED CHACO

By the third morning the territory of the Chaco lay to the west of us, its largely unexplored swamps and jungles covering an area of at least 200,000 square miles, in northern Argentina, western Paraguay, and southeastern Bolivia. Were it not the home of the *quebracho*, that tree which is so important a source of tannin, the region would be even less known than it is.

In the forenoon we reached Corrientes, capital of the province of the same name. It is a typically Spanish-looking, sleepy old place, with its one-storied whitewashed brick homes showing only blank walls to the narrow, filthy, roughly cobbled streets.

Immediately above the city the river is very wide, but, thanks to high water, we were able to stay close to the west shore, behind a string of islands. Fresh-water gulls, small cranes, and large, dull-blue kingfishers vied for interest with the alligators basking on the sunny banks.

Soon we reached the confluence of the Paraná and Paraguay rivers, and continued up the latter. The "Alto Paraná," as it is called above the junction, comes in from the east and is a much larger river than the Paraguay, but less important, as it is shallow and hard to navigate and flows through a region which as yet has been little exploited. It forms the boundary between eastern Paraguay and Argentina as far as the Brazilian frontier, near which point is the famous Iguazú cataract, higher and wider than Niagara. To reach Iguazú, one transfers at Corrientes to a smaller steamer,

which runs up the Alto Paraná, passing Posadas, the ancient Jesuit town in the semi-tropical territory of Misiones.

THE LAND OF PARAGUAY TEA

Down the Alto Paraná come lighters of cedar logs, cattle, and yerba maté, or Paraguay tea. This latter consists of the pulverized leaves of a scrubby species of ilex (holly). Though scarcely known on the European or American markets, it is universally used in South America, especially by the poorer classes. Nearly every one who tries it learns in time to like it, finding it slightly more stimulating than ordinary tea, and especially beneficial when used to counteract the ill effects of a meat diet.

The Jesuits cultivated yerba maté in great plantations in Misiones, but when they were expelled from the country, a hundred and fifty years ago, they took the secret with them; so that up to a few years ago the total supply came from the plants in the forests.

© Publishers' Photo Service

GAUCHO MINSTRELS IN PICTURESQUE GALA COSTUME

Utility is combined with showiness in the costume of the freedom-loving gaucho. To him it is more important that his *bombachos*, or wide trousers, shall be comfortable than that they be new. His soft, light boots are models of comfort, and his wide belt, heavily decorated with silver, is far easier on his body than one of narrow leather. His favorite musical instrument is a dreamy guitar (see illustration, page 385), but the love lyrics and adventurous ballads of a former age are already becoming more rare and his once ever-ready dagger is less frequently drawn. The cowboy of Argentina is, like his North American cowboy brother, becoming "civilized," and it may not be long before a starched collar takes the place of his picturesque neckerchief.

The first sight of Paraguay, which lay to our right from now on, revealed flooded islets and vast grassy prairies. Humaitá, the first Paraguayan town to which we came, is famous as the scene of an important battle between Paraguay and a coalition of her neighbors. The prominent feature of Humaitá is the imposing red-brick ruin of a great church, whose thick walls, arches, and tower survived the cannonading.

Surrounding the ruin is a beautiful velvety green parade ground, with low barracks behind. The streets of the town debouch on this parade ground, and they, too, are like green lawns—wide, quiet, old-worldy, with cows placidly

Photograph by F. Lamson Scribner

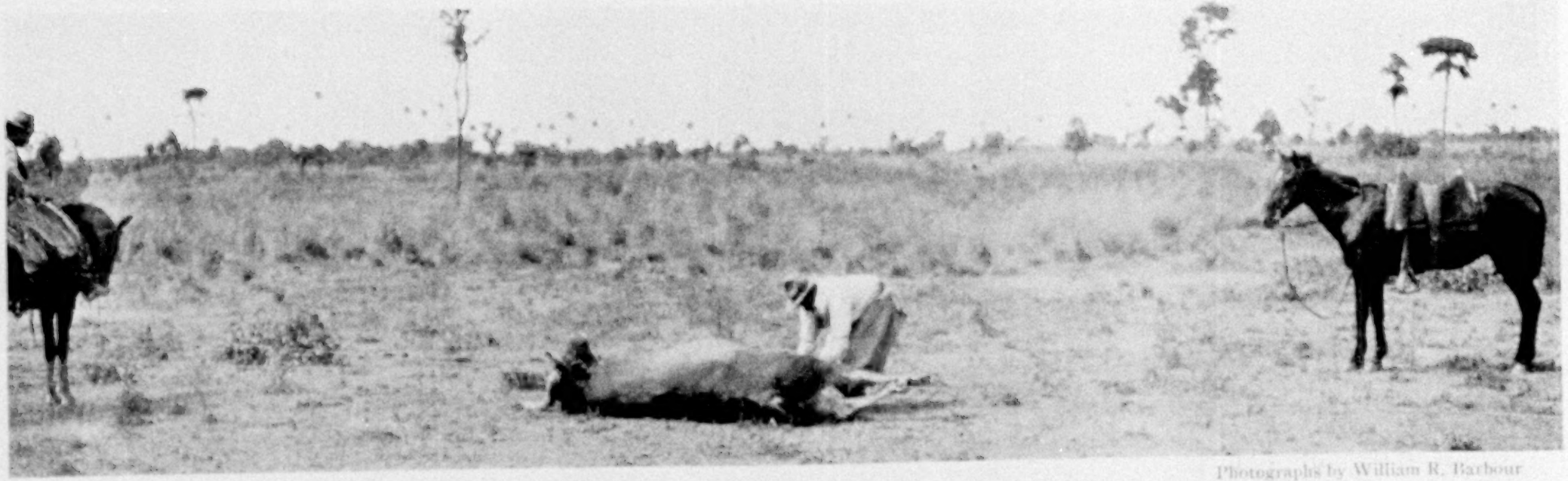
STRETCHING AND DRYING HIDES IN ARGENTINA

Argentina has the raw materials for a vast tanning industry. Not only does extensive stock-raising provide plenty of rawhides and pelts, but its quebracho forests provide the world's main source of tannin. Before the World War, large quantities of this timber were exported to Germany, and a single quebracho concern then employed 8,000 people and its lumbering operations extended over 2,000,000 acres.

XUM

A FORCE OF GAUCHOS WITH THEIR HERD IN THE BACKGROUND

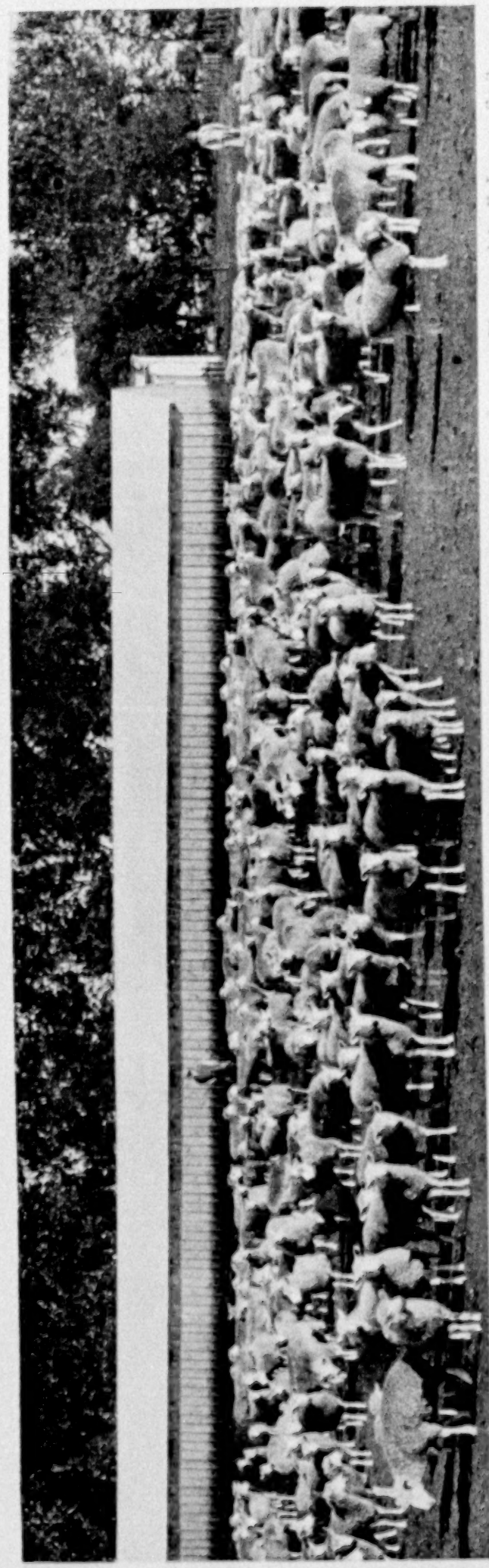
Cattle and not spectators are brought in to an Argentine round-up, or *rodeo*.



Photographs by William R. Barbour

THREE LASSOS WERE REQUIRED TO BRING DOWN THIS ANIMAL

Even the most refractory cattle are soon laid low by the skilful gaucho, whose eye is keen, whose nerve is steel, and whose hand is sure. The cowboy south of the Equator uses a lariat 72 feet or more in length, hand-braided from rawhide.



Photograph by F. Lamson Scribner

ONCE DESPISED, NOW AN IMPORTANT SOURCE OF REVENUE

Only Australia surpasses Argentina in sheep-raising, yet for many years mutton was despised by the South Americans, as the only valuable product of the sheep was supposed to be its wool. In 1794 the Merino breed was imported from Spain. Thirty years later Southdown stock was introduced. In 1844 the introduction of wire fencing greatly stimulated stock improvement.

grazing and an occasional small brown boy sauntering leisurely across. In the gardens are banana trees.

THE PILCOMAYO, A LONG UNCHARTED RIVER

Early on the fourth morning we passed Formosa, a town of some 3,000 people, the capital of the almost wholly unexplored Argentina territory of Formosa, which, with an area about the size of Pennsylvania, has a population of 19,000 people, most of whom live in a narrow belt along the river.

Formosa is administered by a territorial governor appointed by the President. In the interior are several forts, maintained for protection against the warlike Indians who inhabit the forests. Recently one of these forts was destroyed and its garrison massacred.

During the morning the mouth of the Rio Pilcomayo appeared on our left. Rising far away in the table-lands of Bolivia, near the famous silver mines of Potosi, it forms for hundreds of miles the boundary between Argentina and Paraguay, but has never been explored nor its course mapped. One hundred miles above the mouth, navigation on the Pilcomayo is stopped by a gigantic morass, two hundred miles long and fifty miles wide, in which the river entirely disappears.

Nearly opposite the mouth of the Pilcomayo is the Cerrito Lambaré, a rounded knoll which is separated from a similar small hill behind Montevideo by seven hundred miles of land nearly as flat as a table. Behind Lambaré the country rises northeastward toward low mountains in the blue distance.

Soon our course bent westward, and on a low hill to our right appeared a wireless tower, one of several recently erected by the Paraguayan Government. Then a bend to the north, past a brewery high on a wooded bank, and to the east lay our destination, the old, old city of Asunción.

Sloping gently up from the busy docks and custom-house, or *aduana*, the white, tan, and pink tinted walls of the houses, the old red tile roofs, and the green of parks and plazas presented an attractive picture, even with the thermometer 110 degrees in the shade.

Having passed the perfunctory formalities of the customs officers, we took a taxi to the Hotel Cosmos, and so were introduced to Paraguayan currency. The Paraguayan dollar, or *peso*, at the time of our visit was worth about four cents. As the same dollar-mark is used as in the United States, the money is startling at first, with cigarettes at $3.00 per pack, a short taxi ride costing $15.00, and the rate per day at the hotel $80.00.

Paraguay has no gold reserve, and the value of her currency fluctuates from day to day with the stability of the government. The value of the paper peso has been as low as one cent in the past.

A FLOURISHING CITY BEFORE THE PILGRIMS LANDED

What a feeling of age there is about Asunción! Founded nearly four centuries ago, it was a flourishing city, the capital of a vast region, generations before the Pilgrims landed. And the stirring events: Spanish intrigues, the Inquisition, the rise and fall of the Jesuit power, the final overthrow of the Spanish rule, and then tyrants, dictators, revolutions, wars with Argentina and Brazil, continual turmoil and confusion! The last revolution occurred only a few years ago. Trouble and bloodshed are in the very cobblestones of the streets, which, laid long ago, have run red many a time.

Of course, there are modern touches. A few automobiles bump over the rough cobbles; there are moving pictures and street-cars, and ugly corrugated iron is beginning to take the place of the picturesque lichen-stained red tiles. But they have very little effect on the general atmosphere of the place.

An especially beautiful touch of rich color is lent to the city in the early summer by the *flamboyante* trees, whose dark, glossy foliage is almost concealed under masses of vivid scarlet blooms. These trees may be seen in *patios*, leaning over whitewashed walls, and often in rows along the sidewalks. There is also another tree, a species of guava, covered with golden yellow flowers.

During the hot months, work hours start very early. Even at 5 o'clock in the morning the town is wide awake: peons in white, with large straw hats, slouch leisurely along; black-clad women, with black mantillas over their heads, hurry home from mass, and native carts begin to rumble along the rough streets.

Soon after mid-forenoon all industry stops and for several hours the city seems deserted.

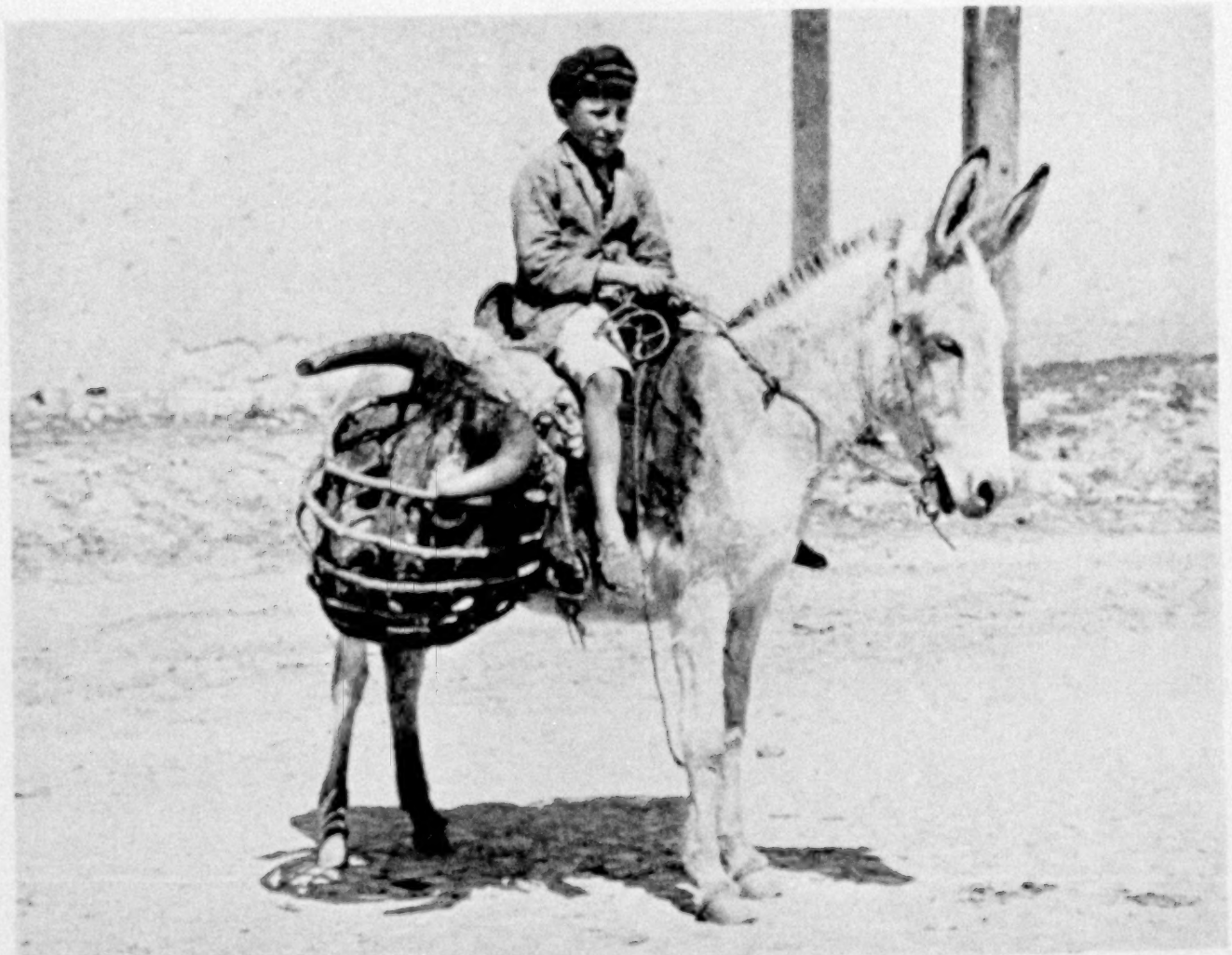
THE MALE POPULATION WAS ALMOST EXTERMINATED

All the common people are barefooted, the men smoking cigarettes and most of the women puffing on short black cigars, which are so strong that even a veteran foreign smoker usually acknowledges himself vanquished when he first tries them. Oddly enough, the native cigarettes are unusually mild.

When the bloody war with Argentina and Brazil finally ended, the male population of Paraguay, after years of heroic resistance against overwhelming odds, was nearly exterminated. It is said that as late as a generation ago there were twelve Paraguayan women for every man, and even now the ratio is three to one. Men in Paraguay are precious and, as a consequence, are not, as a rule, fond of exertion. American meat-canning factories in the country report that almost all their employees are women. The only work in the factories which is done by men is cutting up the carcasses.

A large majority of Paraguayans have a percentage of Guarani Indian blood, which shows in the dark complexions, slightly flattened noses, and straight black hair of the people. When the first Spanish explorers came, the Guaranís occupied the fluvial portions of northern Argentina and Paraguay, and hence were the first to be subjugated.

Today the Guaranís do not exist as a



© Keystone View Co.

A HUMBLE INHABITANT OF THE RICH CÓRDOBA REGION OF ARGENTINA

This child of the lower classes, mounted on a donkey, is returning from a slaughter-house with the skull of a steer in one of the two crude pack baskets which hang from the donkey's sides. Córdoba is the capital of one of Argentina's richest provinces. Its drinking water, light, and electric power come from the Rio Primero, which is held back by one of the largest dams in South America, at a point 12 miles above the city.

separate people, the tribes in the interior being of a different stock and tongue; but the Guaraní language has held its own through the centuries and still is spoken by the lower classes quite as generally as Spanish. It is a primitive dialect, with a vocabulary of less than eight hundred words and only rudimentary grammar. Four is as high as one can count, after which one says "full hand," "full hand and one," etc. Most of the geographical names of Paraguay are Guaraní and a majority of the common names of trees, plants, wild animals, and birds are in that language.

From Asunción a line of small steamers runs on spasmodic schedules up the Paraguay River far into Brazil. Our boat proved to be a filthy little side-wheel tub of six-foot draft, mostly patronized by third-class passengers, who swarmed over the lower deck, drinking maté, smoking, and chattering Guaraní like a troop of monkeys. It was very hot and mosquitoes were numerous. After passing Villa Hayes, named in honor of President Hayes, of the United States, following his decision of a boundary dispute with Argentina in favor of Paraguay, we made our first stop at a high bank to take on passengers from Rosario, a town several miles inland.

THE PARAGUAYAN GAUCHO IN HIS GLORY

Here we first saw the Paraguayan gaucho in all his glory. His shirt is bright-colored and about his neck is loosely knotted a gorgeous silk handkerchief. Tight-fitting white cotton trousers, often with draw-strings at the ankles, extend almost to his armpits. About his waist he girds a six-inch-broad leather

Photograph by William R. Barbour

BEEF EXTRACT STILL ON THE HOOF

Frozen and chilled beef lead the list of Argentine exports, much of the meat being converted into beef extract. There are more than six head of cattle for every inhabitant. About half of the animals are of native breeds and the rest cross-bred with thoroughbred imported stock. Fully one-half of Argentina's 750,000,000 acres is adapted to stock-raising.

belt, to which are sewed little leather pockets, useful for carrying money, cigarettes, and other small personal belongings. Always the belt supports the sheath of a long knife.

Though barefooted, he wears spurs and sometimes loose leather leggings. A fringed apron of soft-tanned brown leather hangs to his knees, its purpose being to protect him when on horseback from thorns and from the pressure of his lasso. Usually he carries a silver-handled, flat-thonged native riding whip, or *revenca*.

PARAGUAY'S GRINNING, BLOODTHIRSTY FISH

When the boat stopped long at landings, we whiled away the time fishing off the stern. Three species of fish are common in the Alto Paraguay. The *pacú* is a fish resembling a bass, which attains a weight of several pounds, and is very good eating. The *armado* is like a catfish, but bears bony back plates like a sturgeon. It grows to be several feet long and is eatable, though soft and tasteless.

But the most interesting fish of the three is the *piranha*, which reaches a length of only six or eight inches and is built like a sun-perch. Its jaws are armed with a most extraordinary set of teeth, keenly sharp, which mesh like the teeth of a steel trap. They project in such a way as to give the creature's mouth the effect of a fixed grin.

Piranhas are found in immense quantities in all the streams of northern Paraguay and are ravenous for blood. If a wounded animal or person falls in the water, they appear in great swarms and in a few moments leave nothing but a skeleton. Often they leap clear of the water, and one can hear their teeth clash thirty feet away. Caught and pulled on deck, they squeak with rage like a cornered rat. Bathing is *not* a popular sport in Paraguay, and in some sections it is even unsafe to wash one's hands in the streams. Because of the *piranhas*, in

Photograph from F. Lamson-Scribner

INDIANS OF THE LITTLE-EXPLORED ARGENTINE CHACO

Dark glades where venomous serpents wait, impassable swamps, and Indian ambush have prevented thorough exploration. The Chaco Indians were until recently given to scalping their enemies and using the skulls as drinking vessels; but gradually they are taking up the modern tasks of harvesting sugar-cane and cutting quebracho timber.

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Photograph by F. Lamson Scribner

A GIANT CACTUS OF ARGENTINA

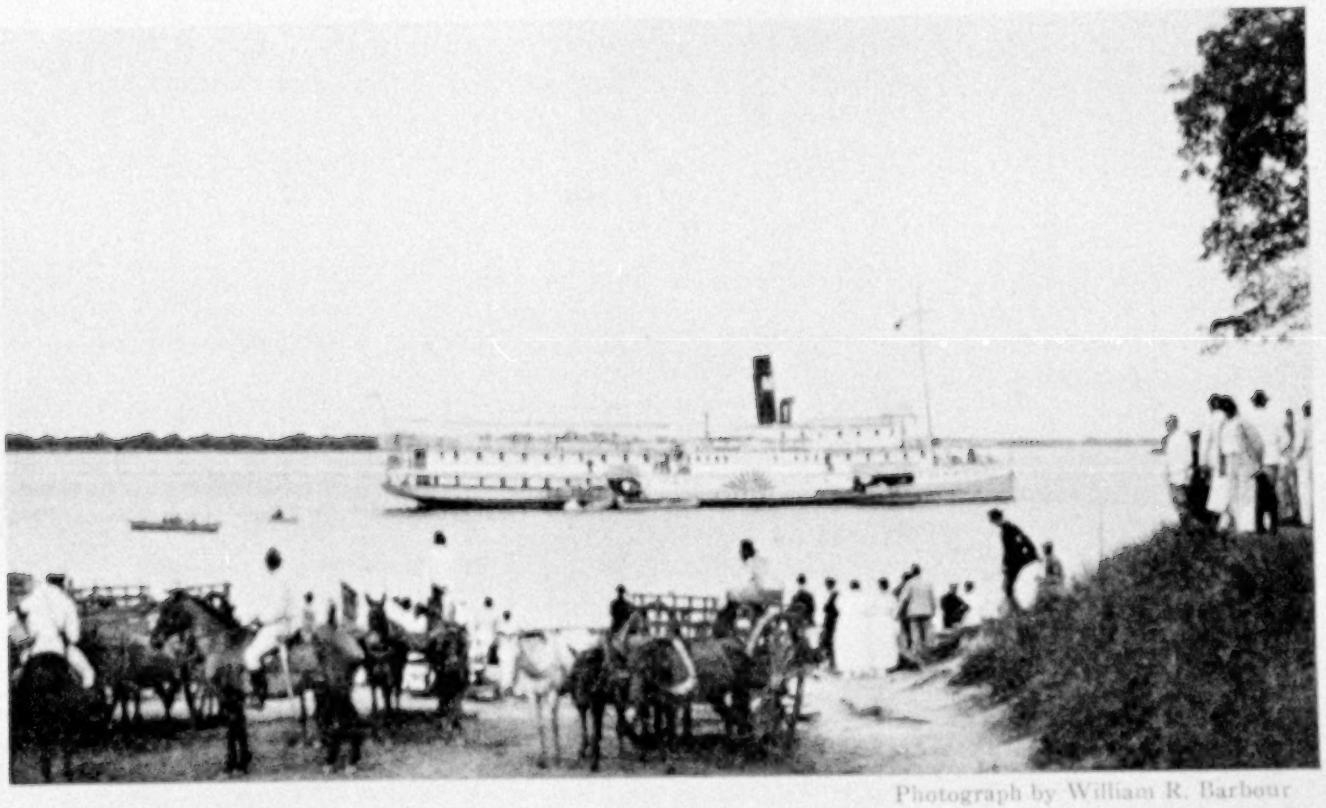
Not often does one find cacti of the arid regions reflected in a placid pool.

PASSENGERS BOARDING A RIVER STEAMER ON THE UPPER PARAGUAY

Photographs by William R. Barbour

COUNTING THE FUEL OF AN UP-RIVER STEAMER

Above Asunción, wood is the only fuel, and the unit of measurement is a stick averaging 11 pounds in weight. Counting fuel takes time, and although the Paraguayan does not mind this, the impatient foreigner is thankful that the fuel to be counted by hand is not nut coal.



Photograph by William R. Barbour

WHEN THE STEAMER ARRIVES AT FORMOSA, ON THE PARAGUAY, THE WHOLE TOWN TURNS OUT

The large white "M" on the funnels of most of Argentina's river steamers stands for romance. Nicolás Mihanovich, a poor lad from Austria, began his career in Buenos Aires 40 years ago by carrying passengers from shore to steamer and back, as did Cornelius Vanderbilt from Staten Island to Manhattan. When he died recently, he owned some 250 steamers operating on the Río de la Plata (River of Silver) and its tributaries.

fishing for *pacú* and *armado* one uses a half orange for bait.

About sunset, when the heat of the day had worn off, the river was beautiful. As our ship slipped quietly around the great bends, whose low shores, usually wooded, sometimes revealed a palm-dotted plain or lonely native hut in a grove of bananas, we took great delight in watching the bird life. There were numberless ducks and gulls, white-headed black cormorants, which the natives called *mbi-guá*, and many specimens of the great gray heron, *garza mora*, a cousin of the dainty white *garza blanca*, which has been hunted for its aigrette plumes till it is nearly extinct.

The next morning we reached the Tropic of Capricorn and stopped at the old town of Concepción. It was intensely hot, but a few of us went ashore to the Hotel Francés, a neat little hostelry run by a French couple. Their *patio* was as pretty and restful a place as one could ask for, with an old-fashioned well under a blooming *flamboyante* tree and beautiful flowering shrubs and plants in pots and tubs. Just above Concepción are an American-owned quebracho extract plant and a meat-canning factory, whose employees maintain an American club in the town.

For a few miles above Concepción the river is dangerous, with shallow, rocky bottom and treacherous, twisting currents. We went through at half speed, the leadsmen continually trying the depth. Constantly on this trip I was reminded of Mark Twain's "Life on the Mississippi."

By morning we had passed Puerto Pinasco and San Salvador, and the country had changed in character. Low, wooded, limestone hills appeared on the right and high cliffs and grottos. To the left, the Chaco swamps remained as before.

The geology of this section is interesting. The Chaco was once a shallow inland sea, with its eastern border about where the river now flows. This sea eventually dried up, leaving vast swamps, with a salty or alkaline grayish sandy soil devoid of rocks. The river is today the

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Photograph by William R. Barbour

THE RIVERSIDE CUSTOM-HOUSE AT ASUNCIÓN, PARAGUAY, SUGGESTS THE ENTRANCE TO A VENETIAN HOTEL

Agricultural machinery, fence wire, railway supplies, and coal enter free of duty here. The average time of mail delivery between New York and Asunción is 37 days. A depth of 10½ feet of water is available on the Rio de la Plata, the Paraná, and the Paraguay throughout the year, although Asunción is 1,150 miles inland.

dividing line, even the plant and animal life differing on its two sides. I was told that a few miles east of the river the country consists of high rolling hills clad with open forests of cedar and other valuable cabinet woods, and with running streams of clear water in the valleys.

Our destination was Puerto Casado, some three hundred miles north of Asunción and only a few miles below the Brazilian frontier. We reached it the next noon, leaving our ship to plow on several hundred miles farther, to its final stopping place at Corumbá, Brazil, and catching it again on its return trip.

ONE FAMILY OWNS SEVEN MILLION ACRES OF LAND

Puerto Casado is the site of an old extract plant, small sawmill, and town of employees. The entire establishment, with seven million acres of wild land, extending across the Chaco to the Bolivian frontier, belongs to one Argentine famly.

We were made welcome by the major-domo and his assistants, including a Swiss, a German, an Italian, and a Japanese, all living together in peace and harmony and only too glad to do all they could for their infrequent visitors. They told me I was the first American who had ever visited Puerto Casado.

To supply the extract plant with quebracho logs, a thirty-inch gauge logging road has been built due west into the jungle. A canvas-covered railway motor car was put at our disposal, and we made several trips to the end of the line.

While most of the quebracho had been cut, a dense forest of other trees remained, with an impenetrable understory of cacti, thorns, and trailing vines.

Occasionally we passed small open spots, along the edges of which the curious tree called *palo borracho* was always conspicuous. It has the shape of a long tenpin or round-bellied bottle, with almost white bark studded with great green thorns. The wood is soft and spongy and the trunks are often used by the Indians for dugout canoes, to which purpose the shape lends itself admirably. Its flowers resemble yellow lilies and are followed by pods or bolls of a cottony substance.

Another common Chaco tree is *palo santo*, whose aromatic, spicy wood smells like an old-fashioned rose jar. In many

native houses this wood is the favorite fuel, for it gives off a pungent smoke which is said to drive away mosquitoes.

Birds were all about us: white-tailed vultures, reddish-winged hawks, Paraguayan quail, long-tailed blackbirds, noisy green parrots, tiny jewel-bright hummingbirds, and small, pure white sparrows, which the natives call *monjas* (nuns).

In open swampy sites wild cannas, both red and yellow, grew by thousands. On the limbs of the trees were many kinds of orchids. The cactus was blooming in white, crimson, and yellow, some of the flowers being as large as dinner plates.

SOME INDIAN TRIBES ARE STILL HOSTILE

Near the end of the line was a small settlement of Indians. They were living in rude, brush-covered shelters and sleeping in hammocks which they wove from the fibers of cactus. The adults of both sexes wore cloths doubled about their hips, supported by thongs over their shoulders.

These Indians had become semi-civilized by occasionally associating with the whites, and once in a while they could be induced to work for a few days. Three other tribes—the Lenguas, Suhins, and Savapanas—live farther to the south and have been nominally converted to Christianity by several Episcopal missions established in the Chaco years ago. The Tobas, who live in the great swamps up the Pilcomayo River, and the Matacos, who roam the unexplored hinterland of northwest Paraguay, are still wild and fierce savages, who have destroyed or driven back the few expeditions which have sought to invade their territory.

Beyond the end of the logging railroad, only thirty miles west of the river, all is unknown country. Nearly four hundred years ago a little band of Spaniards, traveling northwest from a point near Concepción, after untold hardships, reached the settlements in Bolivia; but, so far as is known, the feat has not been duplicated.

Some historians believe that the last remnants of the Incas escaped through Bolivia into the Chaco. At least there are tribes to be studied whose very existence is little more than hearsay, and traditions of strange beasts to be investigated, such as the great dog-headed snake which the Indians firmly believe lives in the deep fens. What a virgin field for exploration and research!

A Scandinavian cattle foreman named Knutson had invited me to accompany him to a cattle round-up, or *rodeo*, some seventy-five miles west of the river; so, after my visit to Puerto Casado, I went on down the river to Puerto Pinasco and joined him. A narrow-gauge logging road extended westward through the Chaco some thirty-five miles; so we loaded our native ponies and saddles on a car, glad of any chance to avoid horseback work with the mercury so near the top of the thermometer.

For a few leagues west of Puerto Pinasco extend plains scattered with palms and *paratodo* trees, whose thick, deeply ridged bark is used locally in lieu of quinine in fighting *chu-chu* fever.

West of this belt of open country the forests begin, and, interspersed with small prairies, extend to the end of the road, near which we found a logging camp. All the buildings were made of the trunks of palms, even the roofs being half trunks gouged out and laid alternately concave and convex.

It was about noon of an intensely hot day when we reached the end of the railway and started on our long horseback ride.

A GAUCHO DANCE AND A GAUCHO ORCHESTRA

About mid-afternoon we reached a camp of gauchos and found a dance in progress. An arbor of palm poles, thatched with rushes, had been built adjoining the covered passageway between two huts, and the earthen dancing floor beneath it was beaten almost as smooth and hard as rock.

The orchestra consisted of a small violin, two Paraguayan guitars, and a most peculiar harp with a wooden coffin-shaped base. The slow music, with many grace notes and runs on the harp, had a weird beauty to it that was most attractive.

A native round dance, called Santa Fé, was in progress. At intervals one couple would appear in the center of a ring of other dancers, and after a few waltz steps would face each other and go through a

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A NATIVE WELL IN THE ARGENTINE CHACO

With an area larger than that of New York State, the Argentine section of the Chaco has a population less than that of Ithaca. A vast plain dotted with lagoons fills the northern part, dense forests lie farther south, and everywhere is to be found the valuable quebracho tree (see also page 414). Swamps, wild beasts, hostile Indians, and miasmatic glades are slowy surrendering before the advance of the colonist.

Photographs by William R. Barbour

A PIONEER'S ABODE IN THE FORBIDDING NORTHLAND OF ARGENTINA

Beside the house is a native oven, built of clay and raised on a platform. A fire is built inside, and removed when the interior is hot. The bread is then put in, all openings are stopped up, and it bakes perfectly.

complicated series of advances and retreats, while the other dancers clapped their hands in a syncopated time.

All the dancers of both sexes were barefooted. The women were dressed in shapeless cotton gowns, high-necked and usually dark-colored. All wore many strings of beads and had their high-piled hair fastened with great, clumsy combs. Most of them were smoking the short, fat Paraguayan cigars.

The men were more gaudily decked out, with extremely tight-fitting and high-waisted white trousers ornamented with big pearl buttons; horn-handled knives and long-barreled revolvers stuck through their broad belts; and bright-colored shirts and neckerchiefs.

While others danced, some of the guests were refreshing themselves with maté, coffee, *caña* (Paraguayan rum), native wine, biscuits, and cheese, all of which were spread out in abundance. The dance had started the night before and (we heard later) did not break up until the following morning.

West of this gaucho village the country changed for the better. We had passed the swampy zone, and while the forests and palm-dotted prairies still alternated, the open areas were larger. Soon the country became gently rolling, with beautiful pasture lands, where the grass brushed our stirrups. Occasionally we passed a small pond black with ducks, and twice forded small streams. I have seldom seen a more attractive country.

A PARAGUAYAN RANCH-HOUSE

As the sun sank, it became pleasantly cool, and I was almost sorry when, about dark, we reached the ranch which was our destination.

This ranch was the last outpost of civilization, and withal a comfortable and pleasant place. Two separate houses, built of palm, with a vine-covered *patio* between, and several employees' huts lay close to the sturdy palm-trunk fence of the corral. The rooms of the ranch-house were dark and cool, with hard dirt floors.

I was given a cot protected from mosquitoes by a thin cloth mosquito net. At daybreak a peon would come shuffling in with a gourd of hot maté and would bring several more while I dressed. It was always comfortably cool in the early mornings.

For a couple of days I hunted the big Paraguayan deer with Antonio, an old Indian, for a guide. He had been chief of a tribe, but had retired in favor of his son, and now lived in a brush shelter near the ranch-house. A few weeks before, there had been an uprising in his tribe, which lived somewhere in the unexplored country to the west, and Antonio had been compelled to go on the warpath. On his return he reported that he had caught the ringleader, tied him to a tree, and broken both his jaws with a club, as a hint to keep the peace thereafter.

Around the ranch Antonio wore a semi-civilized garb, but at home he wore only a sack, as did his two wives. His children wore the same costume—minus the sack.

A PARADISE FOR CATTLE

The great round-up was to be held thirty miles farther west, on Christmas eve; so by daylight Knutson and I had our coffee and biscuits and were on our way. It was a glorious morning, our animals were feeling fit, and I have seldom enjoyed a more splendid ride, loping across the wild plains, now skirting marshes, now crossing rolling hillocks. The tall grass on either side stretched to the horizon, except where low, dark belts of forests intervened. We twice forded a fair-sized stream, to whose source, so I was told, no white man had ever penetrated.

On our way we met a small band of Indians on the march, the chief in the lead, the other men, armed with long bows and arrows, following him in single file, while the heavily burdened squaws and several small papooses brought up the rear.

Knutson told me these Indians are nomads, moving their camp every few days. Little is known of their life and customs. It is believed that they worship the moon and ghosts and spirits. They will never camp where an Indian has died and they avoid many spots which would appear to be suitable camping sites, but which for some reason are taboo.

These Indians live chiefly on meat, wild roots, and fruits. They make an intoxicating drink from the fruit of the

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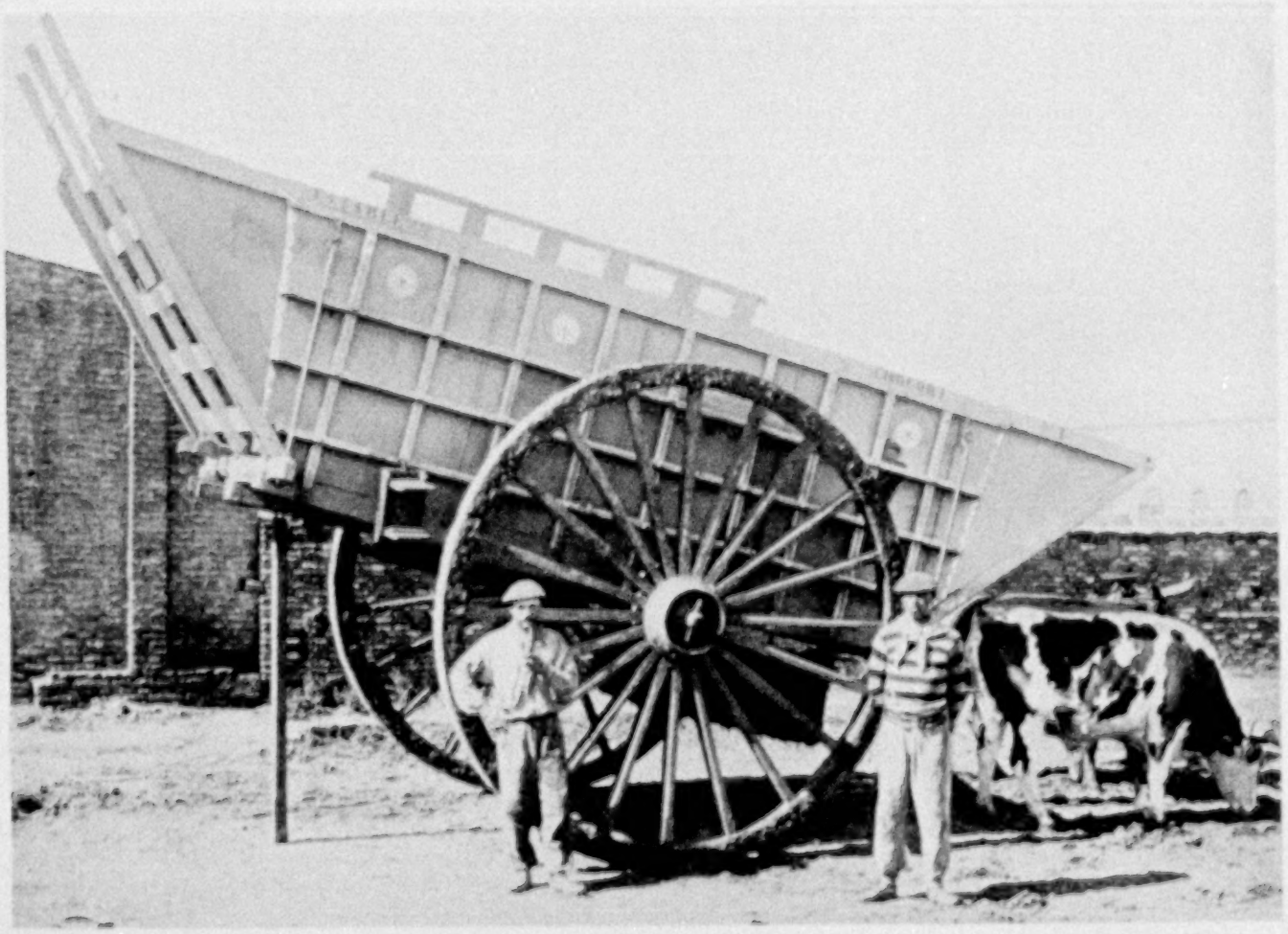
Photograph by William R. Barbour

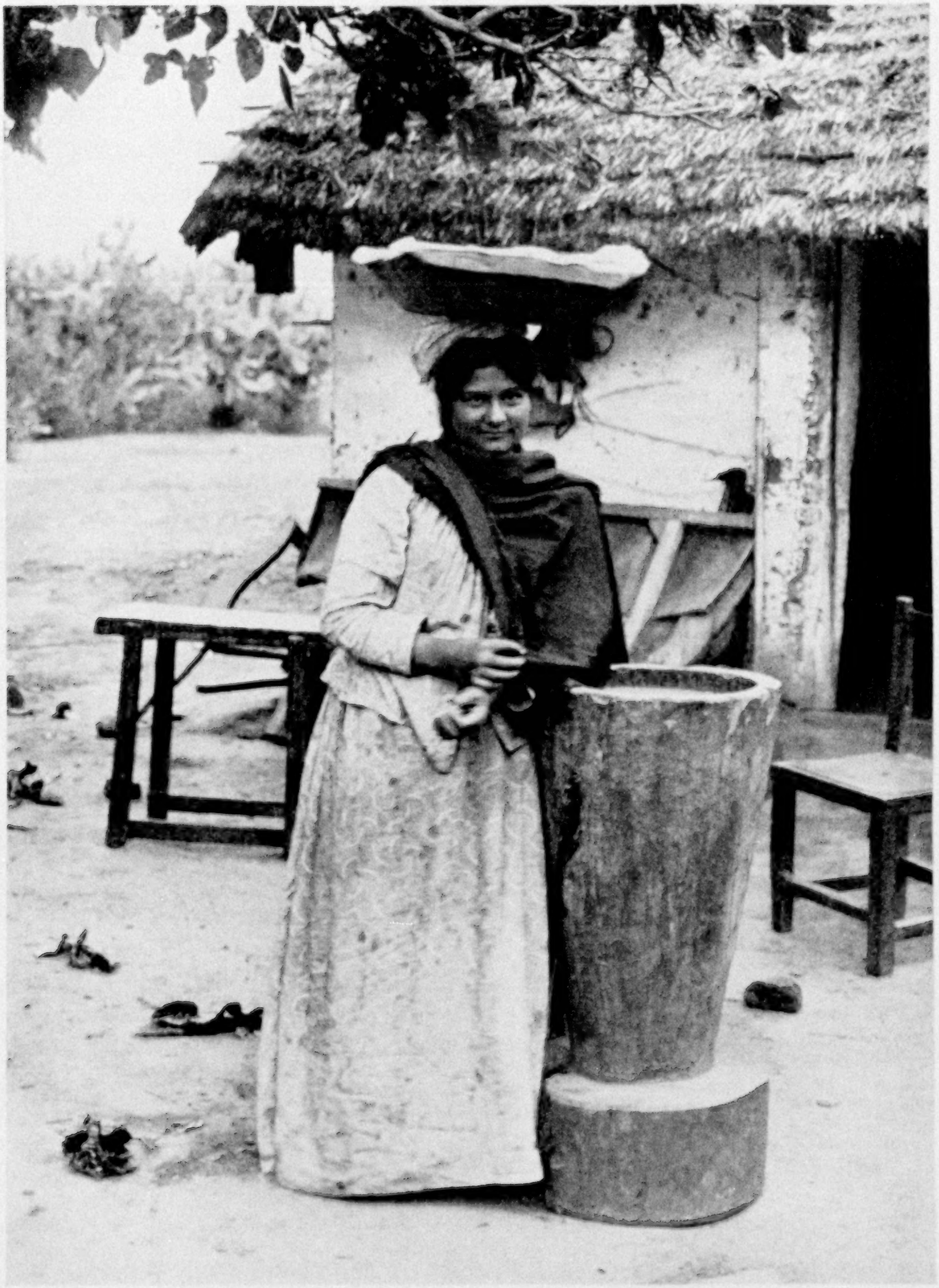
A HOUSEHOLD IN THE NONDESCRIPT RIVER PORT OF CORRIENTES



Photograph from Frederick J. Haskin

A BIG ARGUMENT FOR GOOD ROADS IN ARGENTINA

The country roads are often muddy and full of ruts, and eight-foot wheels are necessary to navigate the almost bottomless highways. Seven or eight horses harnessed abreast or three or four yokes of oxen are required to draw such skyscraper carts when heavy rains turn the level roads into sloughs of despond.



Photograph from F. Lamson Scribner

A NATIVE WOMAN OF ARGENTINA

The eight and a half million people of Argentina are of many races besides the native stock. Colonization has been rather slow, but Italians, Spaniards, French, Russians, Austrians, Syrians, Germans, Britons, Swiss, Portuguese, and North Americans have all answered the call of unoccupied acres in a new land.

algarroba tree, which resembles a locust pod. The method of manufacture does not sound attractive, as the squaws masticate the beans and expectorate them into an earthen vessel, where the mixture is allowed to ferment in the sun.

TEN THOUSAND CATTLE IN THE ROUND-UP

We found the scene of the *rodeo* to be an open plain with a brushy-banked creek looping about two sides of it. *Rodeos* had been held here for several years, and the grass was worn away over many acres. Here we were joined by Knutson's assistant foreman, a Paraguayan, and the latter's six-year-old son, a most interesting little chap. During the *rodeo* he "rode herd" assiduously, his shrill treble ringing out wherever things were most exciting. Only a few weeks before, when his father had been thrown from his horse and was about to be gored by an angry cow, the boy had saved the man's life by rushing his horse so fiercely against the cow's flank as to knock it completely off its feet.

A few gauchos were already on hand, guarding some two thousand cattle which had been driven in from the south the night before. Soon, far in the distance we could see a great cloud of dust rising, and we knew that the main herd was approaching. The pillar of dust grew nearer and larger, until at length we could spy the first of the cattle and hear the gauchos in the rear whooping and yelling, as they urged the herd forward. Then we were in the midst of the dust, with wild long-horned cattle all around us.

It was an hour or more before the last of the herd arrived and was milled into a circle with the others, by which time the total number was nearly ten thousand.

The exhibition of lassoing which ensued was well worth the trip. Knutson claims that the gauchos excel the old-time American cowboys at the art of roping, as the latter had better-trained ponies, which enabled them to use a shorter rope, never over sixty feet.

These gauchos were using seventy-two-foot lassos, and the manner in which they noosed running calves, usually having to throw through narrow openings in the confused, constantly shifting mass of cattle, was marvelous.

The lassos were all hand-braided from rawhide and were slightly tapered, being heavier at the noose end. They are never oiled, as it would make them too limber, but sometimes, when a steer has been killed and cut open, the coiled lassos are held for a few moments inside the steaming body cavity, which serves to stiffen and preserve them.

As the calves were roped and dragged, stiff-legged and protesting, from the herd, the mother cows became frantic with rage. They will not bother a man on horseback, but will instantly attack one if on foot. A fat old bull which had been gored in a fight caused the most trouble, and finally had to be held down by three lassos, each with a cow pony straining at the end.

Finally all the cattle had been inspected, the gauchos drove them off in small bands, and soon the plain was deserted for another year. Knutson and I rode slowly back to the ranch and a much-belated lunch, and the next day returned to Puerto Pinasco through a hot, muggy rain. There I bade him farewell and embarked on the long journey down river to Asunción and Buenos Aires.

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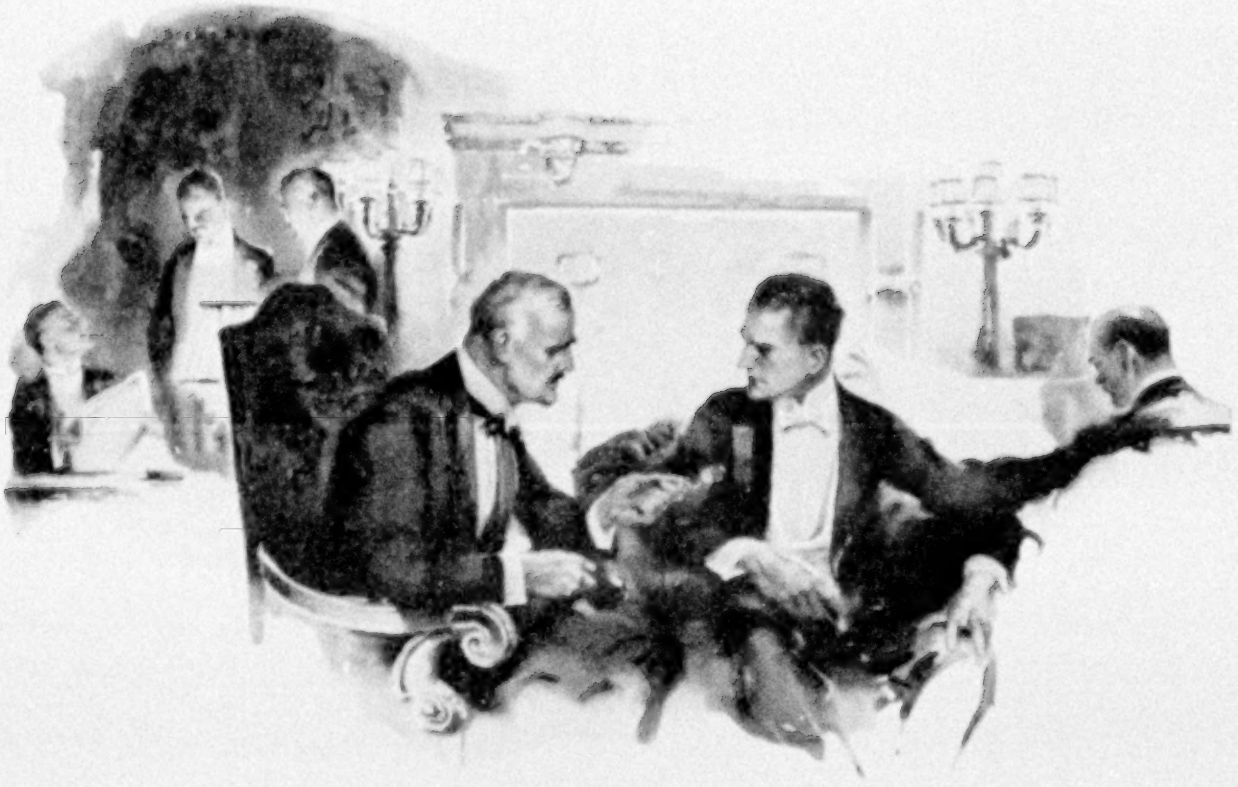

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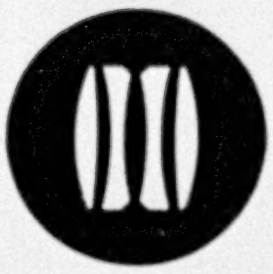

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Through its staff of optical mathematicians, through its Research Laboratory and by means of testing apparatus of the utmost exactitude, the Kodak company has again proved that we here in America can equal the world in the scientific production of instruments of precision.

The production of the Kodak Anastigmat lens is a distinct achievement—not merely in the fact that it is at least the equal of the finest anastigmats made anywhere in the whole world, but in the further fact that through the use of scientific, specialized machinery of the utmost accuracy it is made and sold at a price which is bringing the anastigmat advantages to hundreds of thousands of amateurs who have not hitherto felt that they could afford a lens of the finest quality.

Send for the free booklet "About Lenses". It contains interesting information that you ought to have.

The KODAK ANASTIGMATS

f.7.7 *f*.6.3 and *f*.4.5

Eastman Kodak Company
Rochester, N. Y.

Through the Ages with Father Time—

The First Watch Factory

FOR three centuries after the first "pocket clock," watchmaking remained a one-man industry. This made the cost prohibitive, except for the wealthy few.

But up in the snow-capped mountains of Switzerland a modern manufacturing idea was stirring—the principle of specialized labor. By 1840 this idea had assumed factory proportions. The first factory building was a mere assembling plant—the real factory was the mountaineer's home. Here all hands specialized in shaping or finishing some one watch part, under the guidance of the manufacturer.

As everything was hand work, aided only by the fiddle-bow lathe, no two parts were precisely alike. A broken watch went back to the maker of the broken part for repair.

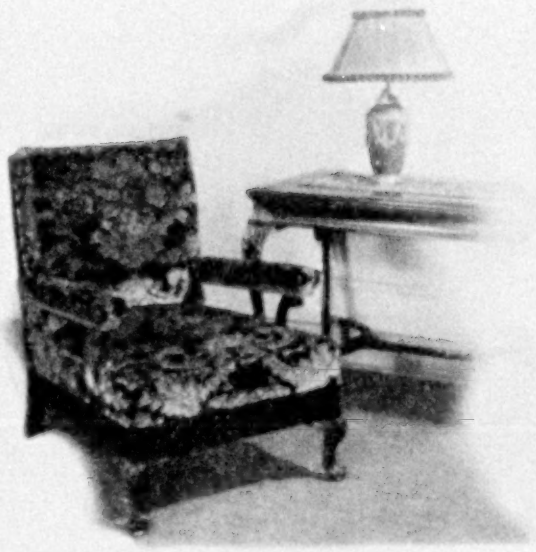
Not an ideal manufacturing situation—yet a long upward step toward the organized production of our day which has made possible those marvels of *standardized, interchangeable* construction—

Elgin Watches

TRADE MARK

One of the Corsican Series of Elgin Watches—"with the bow shaped like Napoleon's campaign hat"

Material, construction, adjustments and service fully covered by the Elgin Guarantee



Individual Arm Chair and End Table
Style No. 604.

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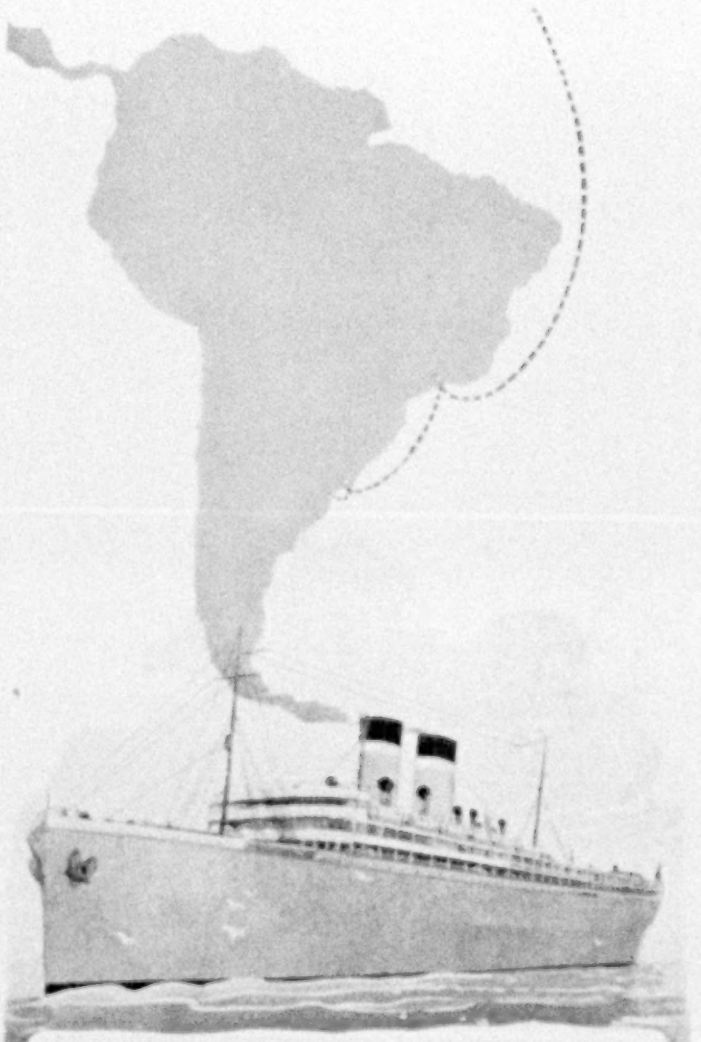

SOUTH America, little known, strangely beautiful and interesting, tempts tourist and commercial man as never before.

Other countries have their attractions, but South America is a new field for pleasure and business. It affords the fresh variety travelers always seek. Added to the reputation of the Munson Line are new and splendid facilities. "American Legion" and "Southern Cross," new oil-burning steamers of the U. S. Shipping Board, have now entered the excellent service given by the Munson Fleet.

These splendid ships use oil fuel, which makes them roomy and dustless. They have twin screw propellers and are 535 feet long. Beds instead of berths. Many rooms with private baths. The latest system of ventilation. Electric fans in every state-room. Small dining-tables. Fully described in a new booklet.

Fast and luxurious passage to Rio de Janeiro, Montevideo, and Buenos Aires. Munson Line holds record between New York and Rio.

S.S. Aeolus, 21,000 Tons, 1st, 2d, and 3d Class....Oct. 15
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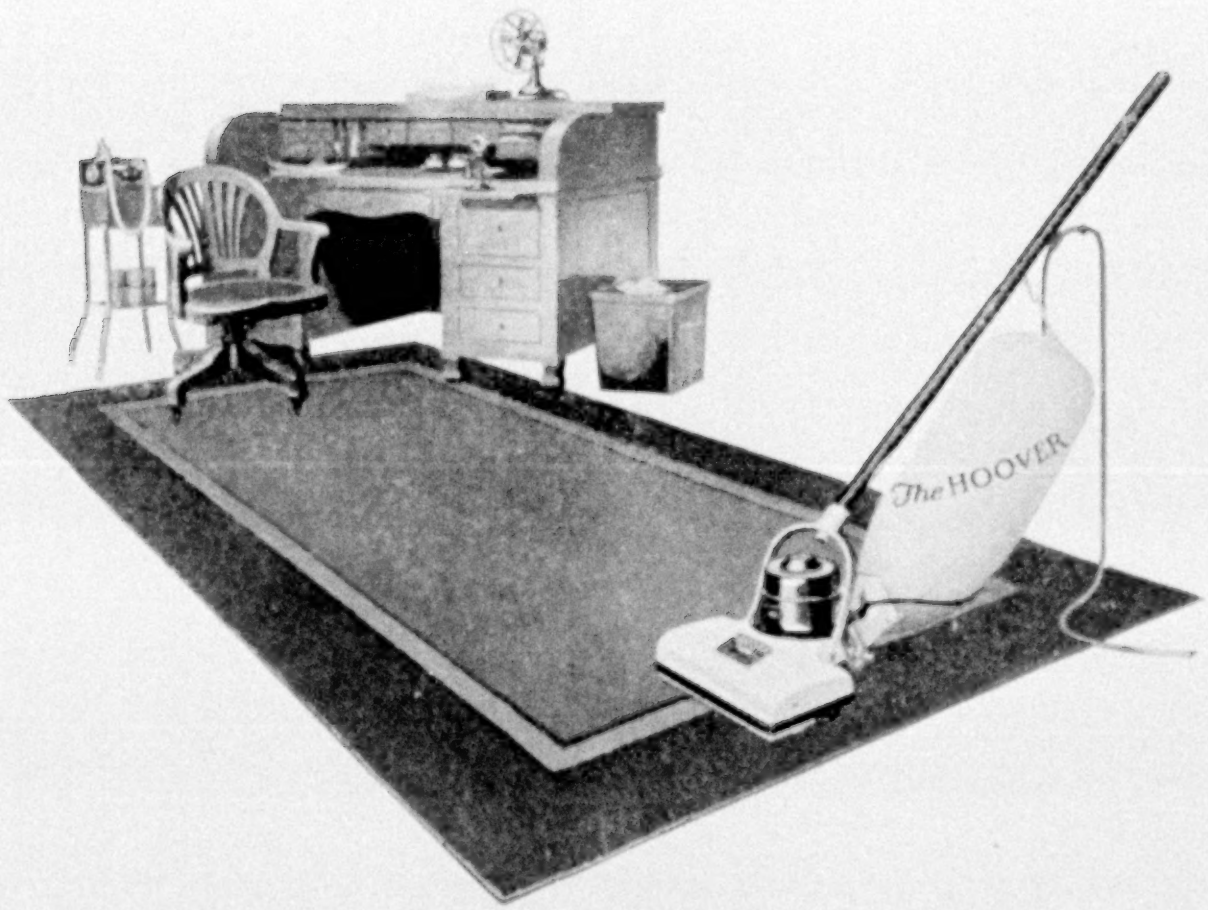

The man of business whose tasks are made shorter and easier with modern devices, should be the first to advocate similar efficiency in his household. In particular should he approve a home labor-saver that eliminates the injurious drudgery of sweeping and dusting and one that repeatedly repays its cost, as does The Hoover. For this efficient cleaner ends carpet-cleaning expense, increases the efficiency of help and effects other tangible savings. Chief among these is the added life it imparts to floor coverings by gently beating out all nap-wearing, embedded grit as it electrically sweeps up all clinging litter, erects matted nap, brightens colors and suction cleans. Only The Hoover does all this. Hoover-cleaned homes are the standard for cleanliness and healthfulness, so let your next investment be a Hoover.

The HOOVER

It Beats — as it Sweeps — as it Cleans

Write for booklet, "How to Judge an Electric Cleaner," and names of Authorized Dealers licensed to sell and service Hoovers bearing our guarantee

The Hoover Suction Sweeper Company, Factories at North Canton, O., and Hamilton, Ont

The Hoover lifts the rug from the floor, like this—gently beats out its embedded grit, and so prolongs its life

"Mention The Geographic—It identifies you"

THE feeling, which permeates our entire organization, that each revolver produced must add to the high reputation maintained since 1853, is in large measure responsible for the present superiority of our product.

SMITH & WESSON

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To insure direct, accurate, and fast transmission of your cables to Latin America, mark them "Via All America."

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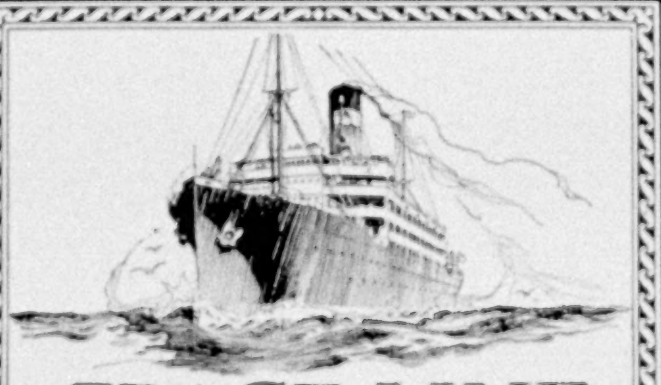

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Land of Mystery and Charm

Visit the land of the Incas, where civilization flourished centuries before Columbus discovered the Western Hemisphere. See the wonderful mountain ranges, quaint towns, picturesque harbors and interesting peoples of

PERU AND CHILE

Direct sailings every three weeks through the Panama Canal. Fast new American steamers. Every comfort; unexcelled service. Steamer is your hotel during entire trip. A tour that you will always look back upon with pleasure. *Write for Booklet A; address Passenger Department.*

GRACE LINE Inc.
10 Hanover Square New York

Have *You* Seen

How this test beautifies the teeth?

Millions of people have accepted this offer—have made this ten-day test. They have found a way to whiter, cleaner, safer teeth.

We urge you to do likewise. Watch how your teeth improve. Learn what this new method means to you and yours.

Remove the film

Teeth are tarnished by a film. By that viscous film you feel. It clings to teeth, gets between the teeth and stays. Old ways of brushing do not end it.

Film absorbs stains, making the teeth look dingy. It mars the beauty of millions. But it also is the cause of most tooth troubles.

Film is the basis of tartar. It holds food substance which ferments and forms acid. It holds the acid in contact with the teeth to cause decay.

It forms a breeding place for germs. They, with tartar, are the chief cause of pyorrhea. Very few people who brush teeth daily escape these film-caused troubles.

How to fight it

Dental science, after long research, has found ways to fight that film. Authorities have amply proved those methods. Leading dentists everywhere now advise their daily use.

They are embodied in a dentifrice called Pepsodent. And other most important factors are included with them.

New protections

Pepsodent combats the film in two effective ways. It also aids Nature in ways considered essential.

It stimulates the salivary flow — Nature's great tooth-protecting agent. It multiplies the starch digestant in the saliva, to digest starch deposits that cling. It multiplies the alkalinity of the saliva, to neutralize the acids which cause tooth decay.

Twice a day, Pepsodent is bringing millions these much-desired effects.

The test is free

Simply mail the coupon for a 10-Day Tube. Note how clean the teeth feel after using. Mark the absence of the viscous film. See how teeth whiten as the film-coats disappear. Watch the other good effects.

You will realize then that this way means a new era in teeth cleaning. And we think you will adopt it. Send coupon now.

Pepsodent PAT. OFF. REG. U.S.

The New-Day Dentifrice

A scientific film combatant, whose every application brings five desired effects. Approved by highest authorities, and now advised by leading dentists everywhere. All druggists supply the large tubes.

649

10-Day Tube Free

THE PEPSODENT COMPANY,
Dept. 109, 1104 S. Wabash Ave., Chicago, Ill.:
Mail 10-Day Tube of Pepsodent to

Only one tube to a family

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The S.S. "CARONIA" of the Cunard Steam Ship Company, under special contract to us and under our exclusive management, will sail from New York

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Grand Cruise De Luxe

TO THE

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The Cruise being *STRICTLY LIMITED TO 350 GUESTS*, the utmost individual comfort in staterooms and on decks is assured. Hotel accommodations ashore, as everything else, will be of the highest order, in short, luxury and comfort will be the keynote.

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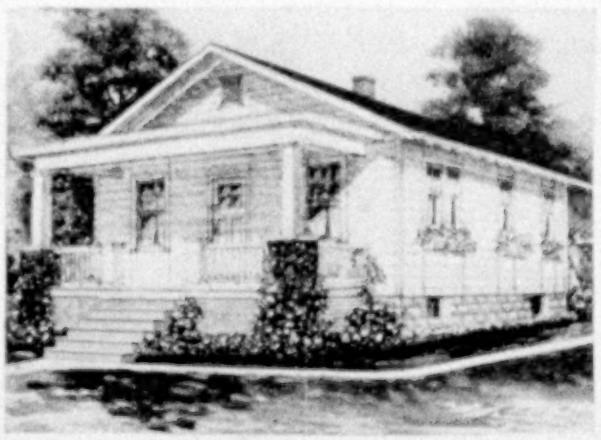

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Only $1,650, f. o. b. Brooklyn

THIS newest type of Bossert home with living room 12' x 18', two bedrooms 9' x 12', kitchen 9' x 9', bath and two closets, fabricated at our plant and shipped in sections for immediate erection costs only $1,650, f. o. b. Brooklyn, N. Y. The only work necessary on the ground is the assembling of parts, not requiring expert labor, and the building of foundations, masonry work and wiring. Time, bother, expense saved—yet a permanent all the year home.

Bossert builds many other beautiful models—ranging from attractive small garages to architecturally beautiful homes.

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A Garden Full of Darwin Tulips for $2.00

In anticipation of again placing before our customers a collection of Darwin Tulips we have had a sufficient quantity grown so that we can offer

50 Giant Darwin Tulip Bulbs, Finest Mixed, for $2.00

selected from fifteen named varieties

Few spring flowering plants rival the Darwin Tulip for brilliance of bloom. Borne on strong stems often exceeding three feet. They are a wonderful addition to the flower garden.

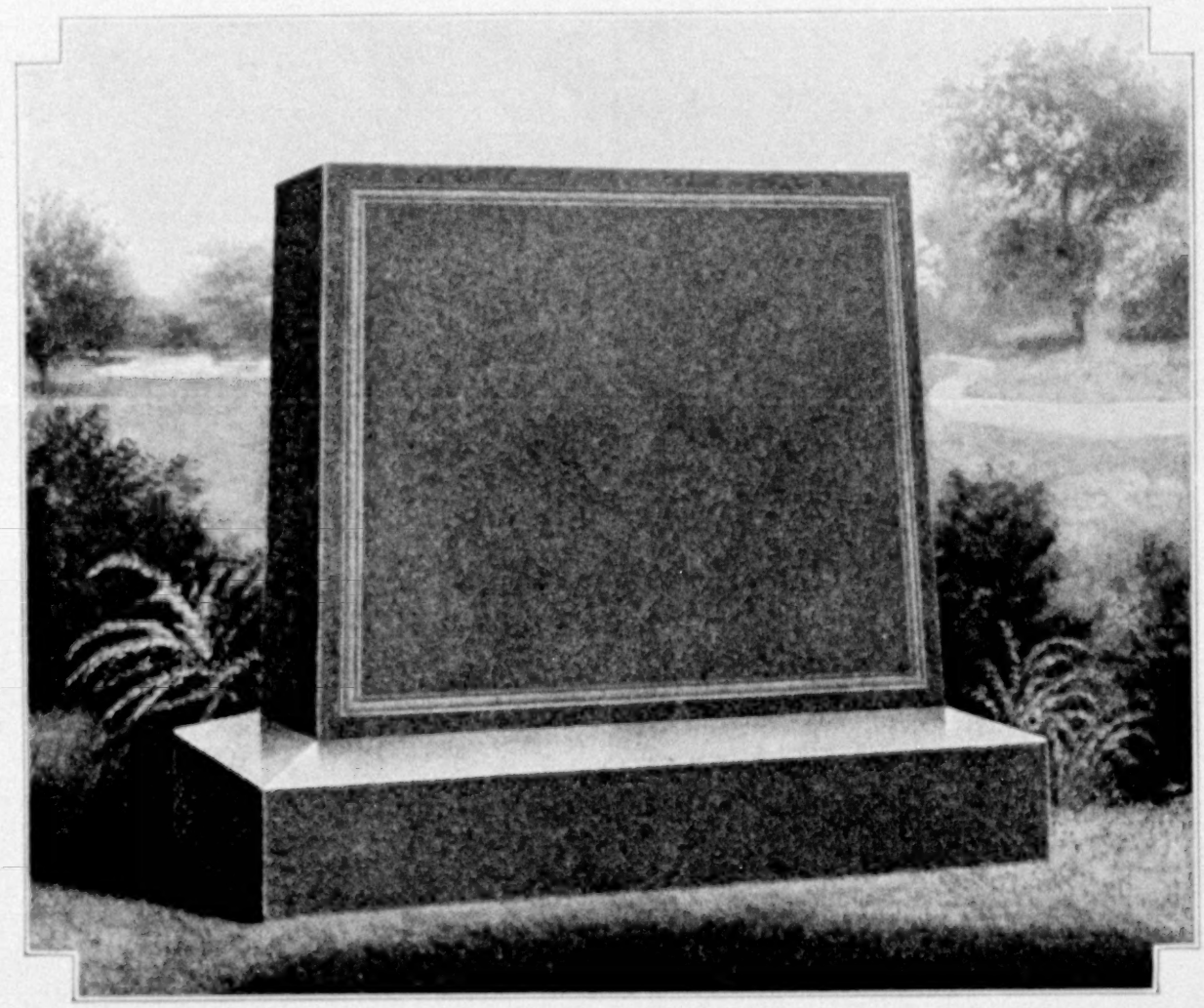
Plant any time before the ground becomes frozen, and they will bloom from the middle of May to Decoration Day.

Mail this advertisement with check, money order, cash, or stamps, and secure this exceptional collection, sent prepaid to any point in the U. S. east of the Mississippi. **For points West and Canada, kindly add 25c. to cover cost of delivery.**

Our 1921 Fall Bulb Catalogue sent on request.

Stumpp & Walter Co

30 and 32 Barclay Street New York



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A memorial from ROCK OF AGES granite is without a peer. It will endure the elements, it will retain its dark silken beauty, it will reflect and perpetuate an individuality to generations yet unborn.

ROCK OF AGES is our registered trade-mark. But Cemetery Associations permit no visible trade-mark. Therefore we issue on request a Certificate of Perfection which guarantees to you a perfect memorial. Be sure to ask for it when placing your order.

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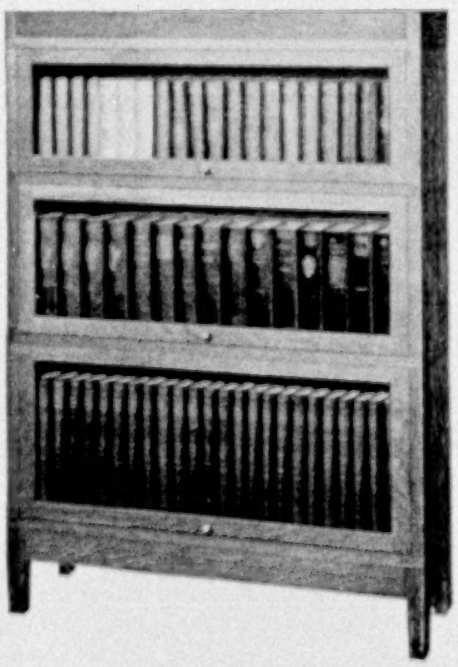

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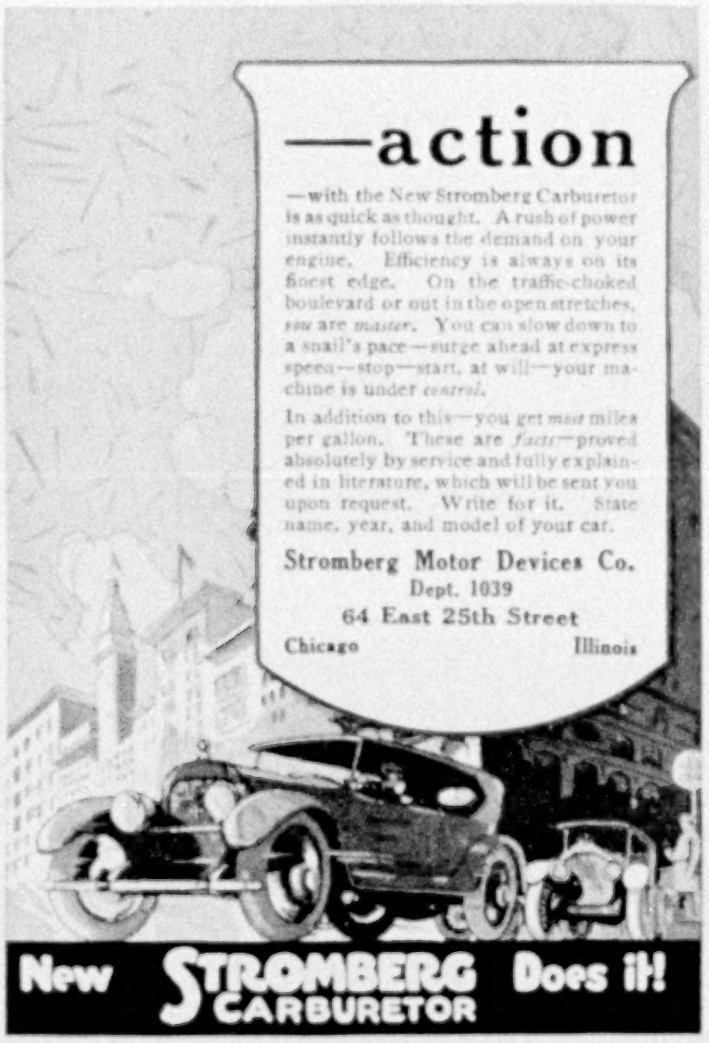
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—with the New Stromberg Carburetor is as quick as thought. A rush of power instantly follows the demand on your engine. Efficiency is always on its finest edge. On the traffic-choked boulevard or out in the open stretches, *you* are *master*. You can slow down to a snail's pace—surge ahead at express speed—stop—start, at will—your machine is under *control*.
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New STROMBERG CARBURETOR Does it!

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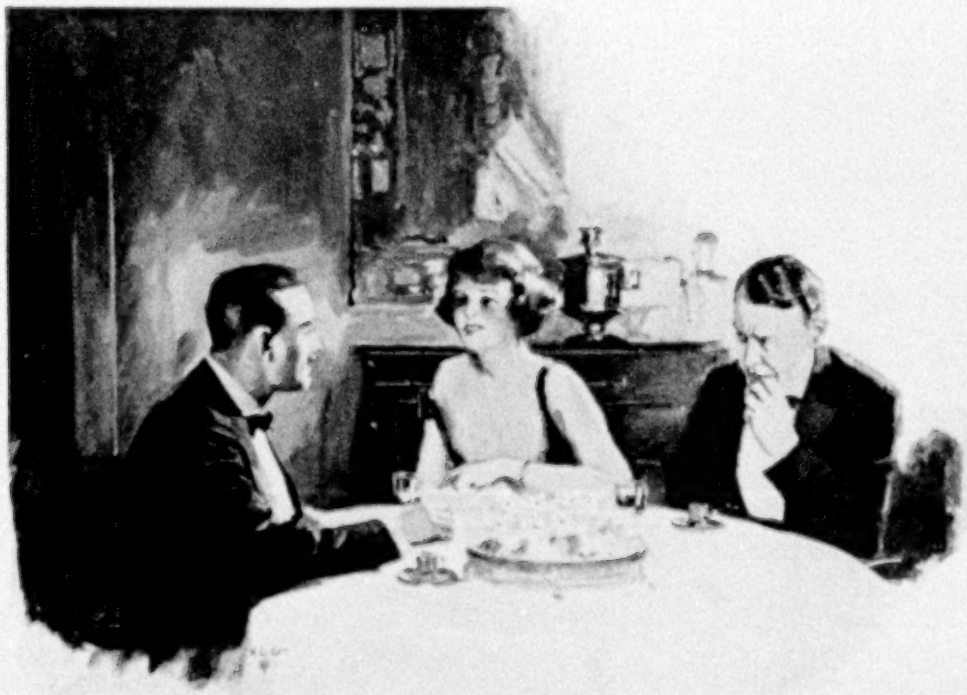
The Rat Biscuit Co., Springfield, Ohio

Rat Bis-Kit

For Mice Too



Which of these two men has learned the secret of 15 minutes a day?

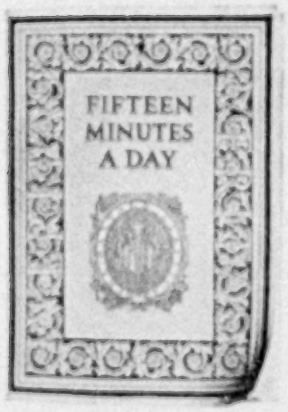
The secret is contained in the free book offered below. Until you have read it you have no idea how much 15 minutes a day can mean in growth and success. Send for your copy now.

HERE are two men, equally good-looking; equally well-dressed. You see such men at every social gathering. One of them can talk of nothing beyond the mere day's news. The other brings to every subject a wealth of side light and illustration that makes him listened to eagerly.

He talks like a man who had traveled widely, though his only travels are a business man's trips. He knows something of history and biography, of the work of great scientists, and the writings of philosophers, poets, and dramatists.

Yet he is busy, as all men are, in the affairs of every day. How has he found time to acquire so rich a mental background? When there is such a multitude of books to read, how can any man be well-read?

The answer to this man's success—and to the success of thousands of men and women like him—is contained in a free book that you may have for the asking. In it is told the story of Dr. Eliot's great discovery, which, as one man expressed it, "does for reading what the invention of the telegraph did for communication." From his lifetime of reading, study, and teaching, forty years of it as President of Harvard University, Dr. Eliot tells just what few books he chose for the most famous library in the world; why he chose them and how he has arranged them with notes and reading courses so that any man can get from them the essentials of a liberal education in even fifteen minutes a day.



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The Fascinating Path to a Liberal Education

Every well-informed man and woman should at least know something about this famous library.

The free book tells about it—how Dr. Eliot has put into his Five-Foot Shelf "the essentials of a liberal education," how he has so arranged it that even "fifteen minutes a day" are enough, how in pleasant moments of spare time, by using the reading courses Dr. Eliot has provided for you, you can get the knowledge of literature and life, the culture, the broad viewpoint, that every university strives to give.

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Chamberlin Metal Weather Strip Co., Detroit, Mich.

Gentlemen:—Tell me the cost of equipping my building with Chamberlin Metal Weather Strips (check whether home, factory, office building, church, school).

Give number of outside *doors*..... *windows*.....

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Eng. Dept-6

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90% of your heat loss at doors and windows is due to air-leakage between the frame and sash. (National averages on 500,000 buildings.)

Why Fight This With Fuel?

Why heat your home or business building over and over?

At 10,000,000 windows and doors, Chamberlin Metal Weather Strips permanently end this enormous fuel waste. They make homes dust-proof. Protect hangings, furnishings, decorations. Save ceaseless dusting. End rattling windows and doors.

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Houses are evenly heated. No cold spots. You are not driven from the brightness of the windows by chill draughts. Children are safe from cold air currents. Healthier, more cheerful homes result.

Free The cost of Chamberlin weather-strips is less than you would think. An estimate by our engineering department, on the cost of your equipment, is free. Just send the coupon.

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It is no longer necessary to go through all of the fatiguing distasteful work of dipping out of water and scrubbing in order to clean the closet bowl. *Sani-Flush* does all of the hard work for you. Sprinkle a little into the bowl, follow the directions on the can and flush. Where there were stains and markings before there is a refreshingly white and shining surface and the hidden trap is as clean as new. Disinfectants are not necessary for *Sani-Flush* does its work thoroughly.

Sani-Flush is sold at grocery, drug, hardware, plumbing, and house-furnishing stores. If you cannot buy it locally at once, send 25c in coin or stamps for a full sized can postpaid. (Canadian price, 35c; foreign price, 50c.)

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Sani-Flush

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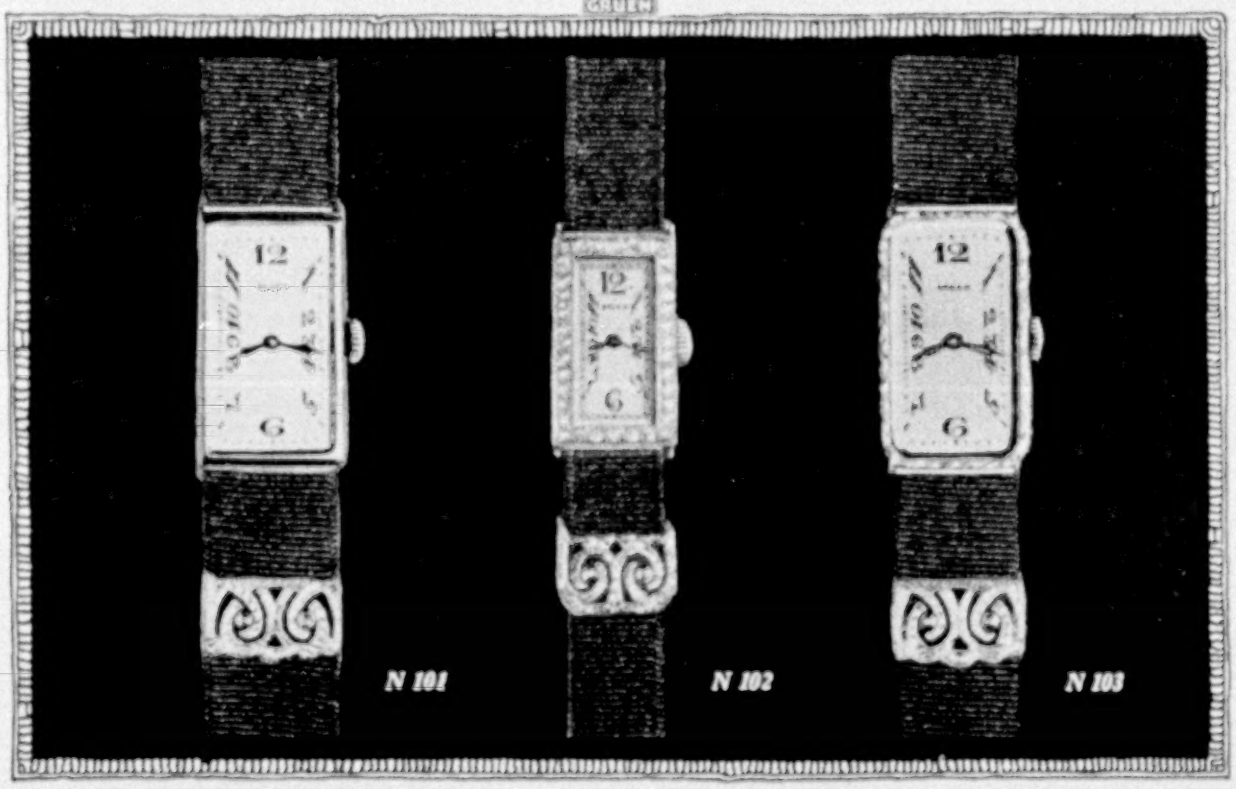
Cleans Closet Bowls Without Scouring



★ *Cartouche: An ancient Egyptian tablet of oblong shape bearing the insignia of royalty*

Announcing The GRUEN *Cartouche*★

TRADE MARK

The logical wrist watch shape

THE diagram below explains the growing popularity of the Gruen Cartouche Wrist Watch.

On the arm the Cartouche is not only an ornament of rare beauty and distinction, but it is a timekeeper of greater dependability as well. Its oblong movement in an oblong case forms a wrist watch of the most logical shape.

Of the same width as the round movement, the Gruen Cartouche provides double the space for its parts.

The result is greater sturdiness and accuracy in a small, compact wrist watch of beautiful form.

The exquisite models, shown here, in green gold, white gold, and in platinum, are among the finest examples of the Gruen Cartouche. Each is a product of the highest artistry; each fashioned to the exacting standards of the Gruen Guild.

You may see these Gruen Cartouche Wrist Watches at the best jewelry stores in each community, to which the sale is confined. Look for the Gruen Service Emblem displayed by all Chartered Agencies.

Special note: *If your jeweler should not yet have these new watches send your order direct to us and we will supply you through him*

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Masters in the art of watchmaking since 1874

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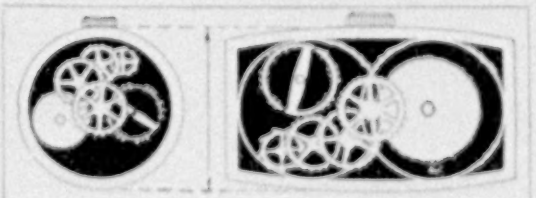

How the Gruen Cartouche makes possible greater strength and accuracy by providing almost double the movement space

N 101. 14 kt. solid green gold $85.00

N 102. Solid platinum, with finest diamonds $650.00

N 103. 14 kt. solid green gold, engraved $90.00

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"I Hear Clearly"

If you are hard of hearing you have embarrassing moments—so do your friends. Is it not worth while to see if all this embarrassment can be avoided?

500,000 persons are now hearing clearly by aid of the Acousticon.

A New York Physician says: "It is of great value to me. I should have been obliged to give up the practice of medicine long ago if I had not obtained this best of all devices for the aid of hearing."

We offer you the

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For 10 Days' FREE TRIAL
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Just write, saying "I am hard of hearing and will try the Acousticon." Give it a fair trial amid familiar surroundings—thus you can best tell what it will do for you.

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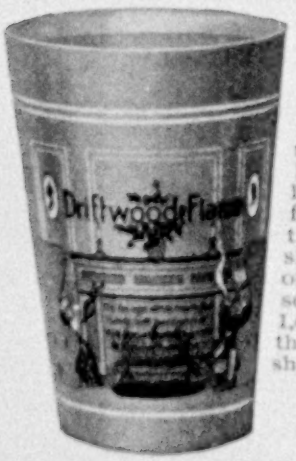

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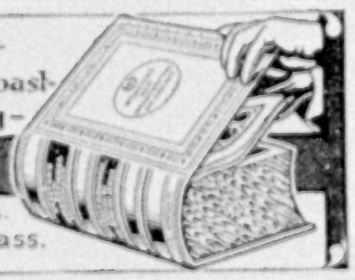

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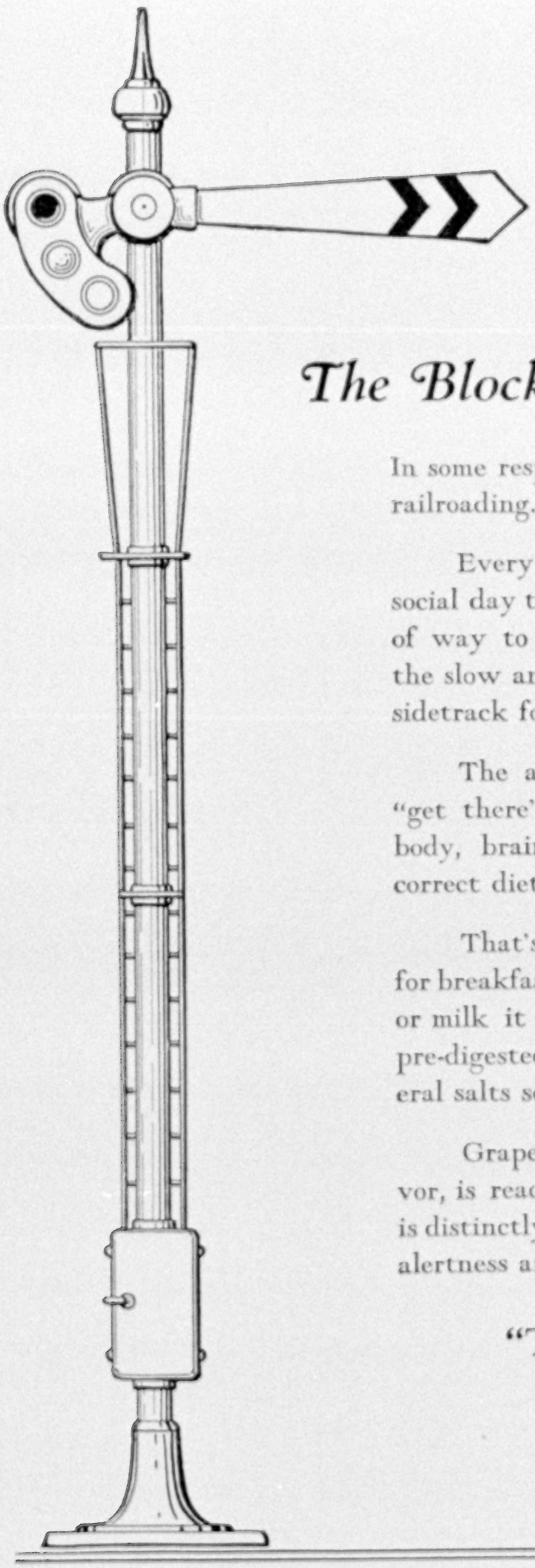

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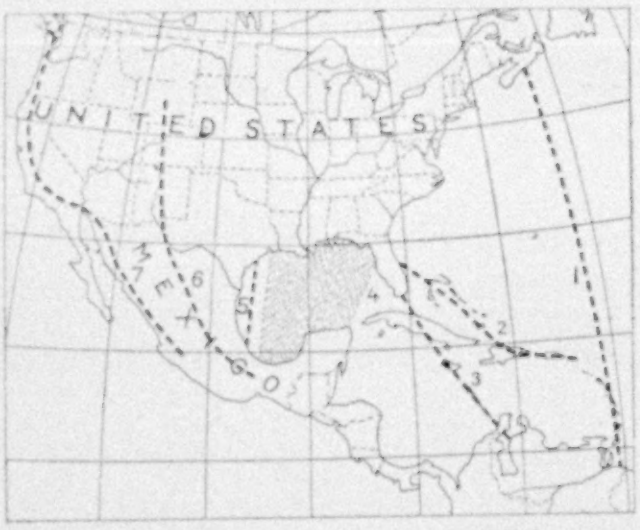

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(See chapter on Bird Migration by Wells W. Cooke, of U. S. Biological Survey.)

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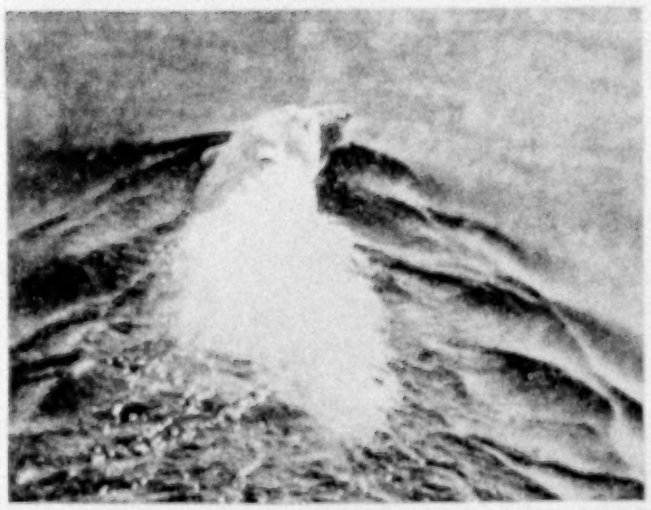

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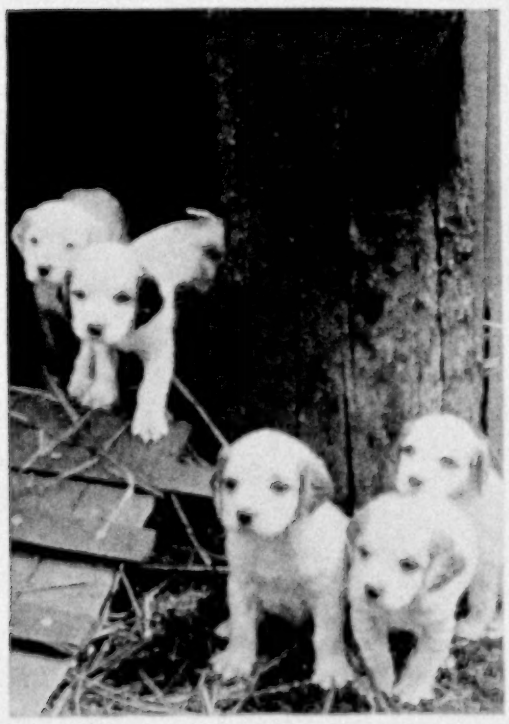

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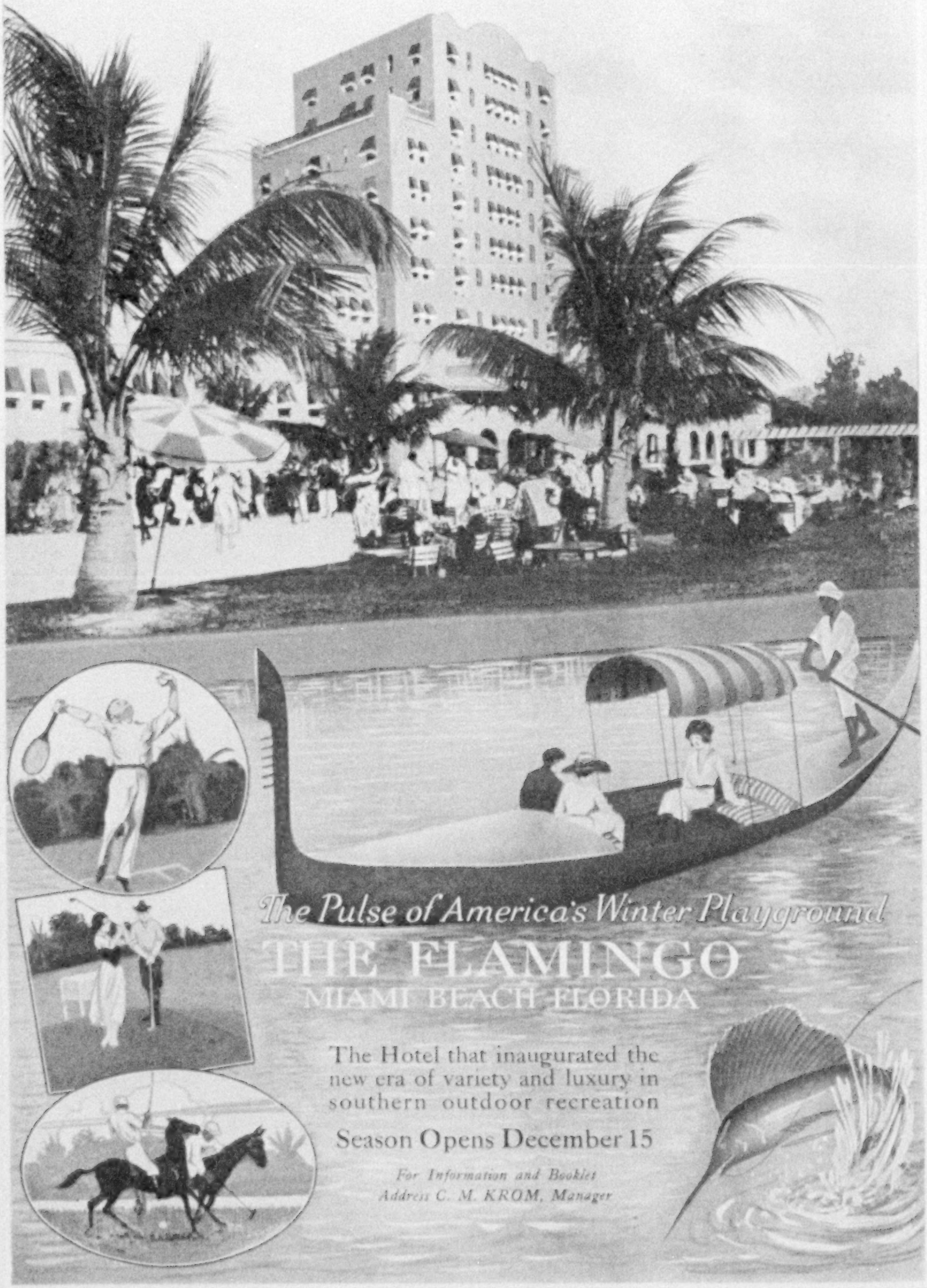
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